



Results of the April 18-19, 2023 PFAS Emissions Tests Performed on the Extruder Exhaust at Zeus Company, Inc.

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Prepared for
Zeus Company, Inc.
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Executive Summary

Barr Engineering Co. (Barr) performed per- and poly fluoroalkyl substances (PFAS) emissions tests at the Zeus Company, Inc. (Zeus) facility located in Orangeburg, South Carolina. The extruder exhaust was tested on April 18-19, 2023.

The facility extrudes fluoropolymer materials for use in medical devices.

Table ES-1 summarizes the stack test results of the compounds with detectable results. All OTM-45 compounds, including those that were not detected are provided in Table 1.

Table ES-1 Extruder Exhaust PFAS Test Results (3 Run Average)

Location	Extruder Exhaust
Test Date	4/18-19/2023
Average Stack Temperature, °F	123
Air Flow Rate	
Acfm	1,700
Dscfm	1,500
Sample Volume	
Acf	117.6
Dscf	116.2
Concentration, lb/dscf	
Perfluoropentanoic acid (PFPeA)	9.1E-13
Perfluorononanoic acid (PFNA)	3.9E-14
Perflouroundecanoic acid (PFUnA)	4.3E-14
Perfluorododecanoic acid (PFDoA)	7.8E-15
Perfluorotridecanoic acid (PFTriA)	1.0E-13
Perfluorotetradecanoic acid (PFTeA)	4.2E-14
Perfluorooctanesulfonic acid (PFOS)	4.6E-15
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.0E-10
Perfluoro-3-methoxypropanoic acid (PFMPA)	5.8E-11
Mass Emissions Rate, lb/yr	
Perfluoropentanoic acid (PFPeA)	0.0007
Perfluorononanoic acid (PFNA)	0.00003
Perflouroundecanoic acid (PFUnA)	0.00003
Perfluorododecanoic acid (PFDoA)	0.000006
Perfluorotridecanoic acid (PFTriA)	0.00008
Perfluorotetradecanoic acid (PFTeA)	0.00003
Perfluorooctanesulfonic acid (PFOS)	0.000004
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.080
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.045

Data qualifiers are provided and explained in Table 1

1.0 Introduction

Barr Engineering Co. (Barr) performed per- and poly fluoroalkyl substances (PFAS) emissions tests at the Zeus Company, Inc. (Zeus) facility located in Orangeburg, South Carolina. The extruder exhaust was tested on April 18-19, 2023.

The PFAS tests consisted of three three-hour runs by EPA Method OTM-45. Tim Russell and Ruby Walden of Barr performed the testing and Doug Cahill of Eurofins TestAmerica (Eurofins) performed the sample recovery.

Testing was performed during normal operating conditions of multiple extruders exhausting to a common stack.

The PFAS stack test sample analysis was performed by Eurofins laboratories in Knoxville, Tennessee. Barr data quality scientists performed a review of the laboratory data. A final lab report was issued by Eurofins once all review and updates were complete. The lab report and sample chain of custody are provided in Appendix C.

2.0 Results

Table 1 summarizes the results of the PFAS emissions from the extruder exhaust.

The back half sample (fraction 2) required dilution to measure 4,8-Dioxo-3H-perflouoronanoic acid (ADONA) and Perflouro-3-methoxypropanoic acid (PFMPA) which increased the detection limits of that fraction for all other target compounds. The dilution resulted in an inability to measure the pre-sampling surrogate spike such that the percent recovery of $\geq 70\%$ and $\leq 130\%$ recovery was not met. The dilution was the root cause of the inability to recover the spike as evidenced by acceptable spike recoveries in the breakthrough sample (fraction 4) of the test runs.

3.0 Process Description

Zeus Company Inc makes small diameter extruding tubing from various performance materials including PE, PTFE, FEP, PFA, ETFE, PEEK, PVDF, Nylons, and more. Material is heated and stretched, and the off-gas emissions go to the extruder exhaust.

4.0 Stack Test Procedures and Methods

Testing was performed from ports meeting EPA Method 1 criteria. Sample port locations and traverse point detail for the tests are provided in Figures 1 and 2. Table 4-1 provides criteria relevant to EPA Method 1 for test location acceptability.

Table 4-1 EPA Method 1 Test Location Criteria

Location	Stack Diameter (inches)	Distance to Upstream Disturbances (diameters)	Distance to Downstream Disturbances (diameters)	Number of Ports	Number of Traverse Points
Extruder Exhaust	12.0	>8	>2	2	12

Volumetric airflow determinations were performed in accordance with EPA Method 2 using an S-type pitot tube in conjunction with the OTM-45 tests.

Stack oxygen concentrations was measured once to verify ambient conditions with a Quantek Q22 portable oxygen meter. The meter was calibrated using one EPA Protocol calibration gas as well as ambient air. After calibration, the stack gas was confirmed ambient before testing began.

Stack gas moisture content was determined by the performance of EPA Method 4, in conjunction with each modified OTM-45 test run. Moisture condensate mass gain values were determined gravimetrically.

PFAS concentrations and emission rates were determined following OTM-45 Measurement of Selected Per- and Polyfluorinated Alkyl Substances from Stationary Sources. Sample train glassware preparations followed the method including the baking procedure. Solvents used in the glassware cleaning and sample recovery have previously been screened for absence of PFAS compounds. Openings of cleaned glassware were covered with rinsed aluminum foil and placed in plastic sealed bags for transport to the test site. Eurofins laboratory provided the spiked XAD traps, solvents, and deionized water.

Sample impinger trains were assembled in a clean laboratory space prior to each test run, with complete train assembly performed at the test location. All openings of the train were covered with rinsed aluminum foil until connected to avoid contamination.

OTM-45 sample train recovery was completed in a clean laboratory space following the method procedures. Samples containers were stored in sealed plastic bags on ice in coolers in the facility laboratory until custody was transferred to the analytical laboratory. Impinger recovery included a final rinse of deionized water to remove residual methanol/ammonium hydroxide after sample recovery had been completed.

QA samples were collected as described in the method which include field media sampling blank, sample train proof blank (clean glassware), and sample train field blank (used in field-cleaned glassware). The

proof blank and field blanks were prepared as described in the method. The field blank was placed at the test location for the same length of time as actual test runs.

The OTM-45 samples were extracted and analyzed by Eurofins using their confidential standard operating procedures (SOP) KNOX-OP-0026 and KNOX-LC-0007. The results are reported in the Eurofins reports J31434-1. The analytical laboratory Level 2 report is provided in Appendix C.

The OTM-45 sample analysis results in reporting of four discrete fractions of the PFAS sample train. Fraction 1 is the filter and probe rinse, fraction 2 is the front sorbent trap (XAD and glassware rinses), fraction 3 is the impinger catch and rinses, and fraction 4 is the backup sorbent trap used to evaluate sample breakthrough. Sample mass is reported as the sum of detected fractions.

Barr has summarized the analytical results to combine the sample train detected mass fractions for each test run. Barr's data summaries include the prescribed OTM-45 flags regarding compound detections in the reagent, proof, and field train blanks. These summaries are in Appendix C. The qualifiers and flags used in the summary include the project qualifiers and the laboratory assigned qualifiers. Qualifiers applied to any individual fraction are applied to the total mass determined for the individual compound. Subsequent data calculated retain all qualifiers applied in the laboratory summaries.

The list of project qualifiers includes:

ND = Below MDL, no detected mass
A = >30 breakthrough to backup trap.
x = compound was above MDL in FMSB
y = Proof Blank results is > 10% of sample fraction mass
z = Field Blank results is > 10% of sample fraction mass

The list of analytical qualifiers includes:

*- = LCS and/or LCSD is outside acceptance limits, low biased.
*+ = LCS and/or LCSD is outside acceptance limits, high biased.
*1 = LCS/LCSD RPD exceeds control limits.
*5- = Isotope dilution analyte is outside acceptance limits, low biased.
*5+ = Isotope dilution analyte is outside acceptance limits, high biased.
CI = The peak identified by the data system exhibited chromatographic interference that could not be resolved. There is reason to suspect there may be a high bias.
I = Value is EMPC (estimated maximum possible concentration).
J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1- = Surrogate recovery exceeds control limits, low biased.
R = Result unusable

Tables

TABLE 1
EPA OTM - 45 TEST RESULTS SUMMARY
Extruder Exhaust

Parameter	Run 1	Flag	Run 2	Flag	Run 3	Flag	Average	Flag
Test Date	4/18/2023		4/18/2023		4/19/2023		---	
Test Period	844 - 1148		1230 - 1534		813 - 1115		---	
Test Duration, min	180		180		180		180	
Average Stack Temperature, °F	121		124		124		123	
Average Moisture Content, %V/V	1.0		0.8		1.1		1.0	
Air Flow Rate								
acfm	1,700		1,700		1,700		1,700	
scfm	1,500		1,500		1,500		1,500	
dscfm	1,500		1,500		1,500		1,500	
Sample Volume								
acf	116.20		117.00		119.70		117.63	
dscf	115.31		114.37		118.78		116.16	
dscm	3.27		3.24		3.36		3.29	
Isokinetic Variation, %	101.0		100.0		100.0		100.4	
Pollutant Concentration, lb/dscf								
Perfluorobutanoic acid (PFBA)	0	ND	0	ND	0	ND	0	ND
Perfluoropentanoic acid (PFPeA)	1.99E-12		0	ND	7.29E-13	J	9.06E-13	J
Perfluorohexanoic acid (PFHxA)	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanoic acid (PFHpA)	0	ND	0	ND	0	ND	0	ND
Perfluorooctanoic acid (PFOA)	0	ND, x, y	0	ND, x, y	0	ND, x	0	ND, x, y
Perfluorononanoic acid (PFNA)	9.10E-14	J	0	ND	2.71E-14	J	3.94E-14	J
Perfluorodecanoic acid (PFDA)	0	ND	0	ND	0	ND	0	ND
Perfluoroundecanoic acid (PFUnA)	1.30E-13	J	0	ND	0	ND	4.33E-14	J
Perfluorododecanoic acid (PFDoA)	0	ND	2.33E-14	J	0	ND	7.77E-15	J
Perfluorotridecanoic acid (PFTriA)	1.87E-13	+	6.71E-14	J, +	4.68E-14	J, +	1.00E-13	J, +
Perfluorotetradecanoic acid (PFTeA)	7.51E-14	J	5.01E-14	J	0	ND	4.18E-14	J
Perfluorobutanesulfonic acid (PFBS)	0	ND	0	ND	0	ND	0	ND
Perfluorohexanesulfonic acid (PFHxS)	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanesulfonic acid (PFHpS)	0	ND	0	ND	0	ND	0	ND
Perfluorooctanesulfonic acid (PFOS)	1.37E-14	I, Cl	0	ND	0	ND	4.56E-15	I, Cl
Perfluorodecanesulfonic acid (PFDS)	0	ND, +	0	ND, +	0	ND, +	0	+
Perfluorooctanesulfonamide (FOSA)	0	ND	0	ND	0	ND	0	ND
Perfluoropentanesulfonic acid (PFPeS)	0	ND	0	ND	0	ND	0	ND
Perfluorononanesulfonic acid (PFNS)	0	ND, +	0	ND, +	0	ND, +	0	ND, +
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0	ND	0	ND	0	ND	0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0	ND	0	ND	0	ND	0	ND
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	0	ND, +	0	ND, +	0	ND, +	0	ND, +
11-Chloroicosafafluoro-3-oxaundecane-1-sulfonic acid	0	ND, +	0	ND, +	0	ND, +	0	ND, +
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	5.77E-11	+	1.73E-10	J, +	8.07E-11	+	1.04E-10	J, +
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	0	ND	0	ND	0	ND	0	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-octadecanoic acid (PFODA)	0	ND, +, *1	0	ND, +, *1	0	ND, +, *1	0	ND, +, *1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	0	ND	0	ND	0	ND	0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctane sulfonamide (NEtFOSA)	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	0	ND	0	ND	0	ND	0	ND
Perfluorododecanesulfonic acid (PFDoS)	0	ND, +, *1	0	ND, +, *1	0	ND, +, *1	0	ND, +, *1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	ND	0	ND	0	ND	0	ND
10:2 Fluorotelomer carboxylic acid	0	ND,	0	ND	0	ND,	0	ND
6:2 Fluorotelomer carboxylic acid	0	ND	0	ND	0	ND	0	ND
7:3 Fluorotelomer carboxylic acid	0	ND	0	ND	0	ND	0	ND
6:2 Fluorotelemer unsaturated acid	0	ND	0	ND	0	ND	0	ND
8:2 Fluorotelomer carboxylic acid	0	ND, *1	0	ND, *1	0	ND, *1	0	ND, *1
8:2 Fluorotelemer unsaturated acid	0	ND	0	ND	0	ND	0	ND
5:3 Fluorotelomer carboxylic acid	0	ND	0	ND	0	ND	0	ND
3-Perfluoropropylpropanoic acid	0	ND	0	ND	0	ND	0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	5.38E-11	J	6.34E-11		5.77E-11	J	5.83E-11	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	0	ND	0	ND	0	ND	0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	0	ND, +	0	ND, +	0	ND, +	0	ND, +
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	0	ND	0	ND	0	ND	0	ND

TABLE 1
EPA OTM - 45 TEST RESULTS SUMMARY
Extruder Exhaust

Parameter	Run 1	Flag	Run 2	Flag	Run 3	Flag	Average	Flag
Pollutant Emission Rate, lb/hr								
Perfluorobutanoic acid (PFBA)	0	ND	0	ND	0	ND	0	ND
Perfluoropentanoic acid (PFPeA)	1.74E-07		0	ND	6.4E-08	J	7.9E-08	J
Perfluorohexanoic acid (PFHxA)	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanoic acid (PFHpA)	0	ND	0	ND	0	ND	0	ND
Perfluorooctanoic acid (PFOA)	0	ND, x, y	0	ND, x, y	0	ND, x	0	ND, x, y
Perfluorononanoic acid (PFNA)	7.98E-09	J	0	ND	2.4E-09	J	3.5E-09	J
Perfluorodecanoic acid (PFDA)	0	ND	0	ND	0	ND	0	ND
Perfluoroundecanoic acid (PFUnA)	1.14E-08	J	0	ND	0	ND	3.8E-09	J
Perfluorododecanoic acid (PFDoA)	0	ND	2.1E-09	J	0	ND	6.8E-10	J
Perfluorotridecanoic acid (PFTriA)	1.64E-08	*-	5.9E-09	J, *-	4.1E-09	J, *-	8.8E-09	J, *-
Perfluorotetradecanoic acid (PFTeA)	6.59E-09	J	4.4E-09	J	0	ND	3.7E-09	J
Perfluorobutanesulfonic acid (PFBS)	0	ND	0	ND	0	ND	0	ND
Perfluorohexanesulfonic acid (PFHxS)	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanesulfonic acid (PFHpS)	0	ND	0	ND	0	ND	0	ND
Perfluorooctanesulfonic acid (PFOS)	1.20E-09	I, CI	0	ND	0	ND	4.0E-10	I, CI
Perfluorodecanesulfonic acid (PFDS)	0	ND, *-	0	ND, *-	0	ND, *-	0	*-
Perfluorooctanesulfonamide (FOSA)	0	ND	0	ND	0	ND	0	ND
Perfluoropentanesulfonic acid (PFPeS)	0	ND	0	ND	0	ND	0	ND
Perfluorononanesulfonic acid (PFNS)	0	ND, *-	0	ND, *-	0	ND, *-	0	ND, *-
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0	ND	0	ND	0	ND	0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0	ND	0	ND	0	ND	0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0	ND, *-	0	ND, *-	0	ND, *-	0	ND, *-
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0	ND, *-	0	ND, *-	0	ND, *-	0	ND, *-
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	5.07E-06	*+	1.5E-05	J, *+	7.1E-06	*+	9.1E-06	J, *+
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	0	ND	0	ND	0	ND	0	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-octadecanoic acid (PFODA)	0	ND, *-,*1	0	ND, *-,*1	0	ND, *-,*1	0	ND, *-,*1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	0	ND	0	ND	0	ND	0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctane sulfonamide (NEtFOSA)	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	0	ND	0	ND	0	ND	0	ND
Perfluorododecanesulfonic acid (PFDoS)	0	ND, *-,*1	0	ND, *-,*1	0	ND, *-,*1	0	ND, *-,*1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	ND	0	ND	0	ND	0	ND
10:2 Fluorotelomer carboxylic acid	0	ND,	0	ND	0	ND,	0	ND
6:2 Fluorotelomer carboxylic acid	0	ND	0	ND	0	ND	0	ND
7:3 Fluorotelomer carboxylic acid	0	ND	0	ND	0	ND	0	ND
6:2 Fluorotelomer unsaturated acid	0	ND	0	ND	0	ND	0	ND
8:2 Fluorotelomer carboxylic acid	0	ND,*1	0	ND,*1	0	ND,*1	0	ND,*1
8:2 Fluorotelomer unsaturated acid	0	ND	0	ND	0	ND	0	ND
5:3 Fluorotelomer carboxylic acid	0	ND	0	ND	0	ND	0	ND
3-Perfluoropropylpropanoic acid	0	ND	0	ND	0	ND	0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	4.72E-06	J	5.6E-06		5.1E-06	J	5.1E-06	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	0	ND	0	ND	0	ND	0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	0	ND, *-	0	ND, *-	0	ND, *-	0	ND, *-
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	0	ND	0	ND	0	ND	0	ND

TABLE 1
EPA OTM - 45 TEST RESULTS SUMMARY
Extruder Exhaust

Parameter	Run 1	Flag	Run 2	Flag	Run 3	Flag	Average	Flag
Pollutant Emission Rate, lb/yr (assuming 8760 hours)								
Perfluorobutanoic acid (PFBA)	0	ND	0	ND	0	ND	0	ND
Perfluoropentanoic acid (PFPeA)	0.001528		0	ND	0.000560	J	0.000696	J
Perfluorohexanoic acid (PFHxA)	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanoic acid (PFHpA)	0	ND	0	ND	0	ND	0	ND
Perfluorooctanoic acid (PFOA)	0	ND, x, y	0	ND, x, y	0	ND, x	0	ND, x, y
Perfluorononanoic acid (PFNA)	0.000070	J	0	ND	0.000021	J	0.000030	J
Perfluorodecanoic acid (PFDA)	0	ND	0	ND	0	ND	0	ND
Perfluoroundecanoic acid (PFUnA)	0.000100	J	0	ND	0	ND	0.000033	J
Perfluorododecanoic acid (PFDoA)	0	ND	0.000018	J	0	ND	0.000006	J
Perfluorotridecanoic acid (PFTriA)	0.000144	*-	0.000052	J, *-	0.000036	J, *-	0.000077	J, *-
Perfluorotetradecanoic acid (PFTeA)	0.000058	J	0.000039	J	0	ND	0.000032	J
Perfluorobutanesulfonic acid (PFBS)	0	ND	0	ND	0	ND	0	ND
Perfluorohexanesulfonic acid (PFHxS)	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanesulfonic acid (PFHpS)	0	ND	0	ND	0	ND	0	ND
Perfluorooctanesulfonic acid (PFOS)	0.000011	I, Cl	0	ND	0	ND	0.000004	I, Cl
Perfluorodecanesulfonic acid (PFDS)	0	ND, *-	0	ND, *-	0	ND, *-	0	*-
Perfluorooctanesulfonamide (FOSA)	0	ND	0	ND	0	ND	0	ND
Perfluoropentanesulfonic acid (PFPeS)	0	ND	0	ND	0	ND	0	ND
Perfluorononanesulfonic acid (PFNS)	0	ND, *-	0	ND, *-	0	ND, *-	0	ND, *-
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEFOSAA)	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0	ND	0	ND	0	ND	0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0	ND	0	ND	0	ND	0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0	ND, *-	0	ND, *-	0	ND, *-	0	ND, *-
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0	ND, *-	0	ND, *-	0	ND, *-	0	ND, *-
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.044	*+	0.133	J, *+	0.062	*+	0.080	J, *+
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	0	ND	0	ND	0	ND	0	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-octadecanoic acid (PFODA)	0	ND, *-,*1	0	ND, *-,*1	0	ND, *-,*1	0	ND, *-,*1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	0	ND	0	ND	0	ND	0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctane sulfonamide (NEFOSA)	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	0	ND	0	ND	0	ND	0	ND
Perfluorododecanesulfonic acid (PFDoS)	0	ND, *-,*1	0	ND, *-,*1	0	ND, *-,*1	0	ND, *-,*1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	ND	0	ND	0	ND	0	ND
10:2 Fluorotelomer carboxylic acid	0	ND,	0	ND	0	ND,	0	ND
6:2 Fluorotelomer carboxylic acid	0	ND	0	ND	0	ND	0	ND
7:3 Fluorotelomer carboxylic acid	0	ND	0	ND	0	ND	0	ND
6:2 Fluorotelemer unsaturated acid	0	ND	0	ND	0	ND	0	ND
8:2 Fluorotelomer carboxylic acid	0	ND,*1	0	ND,*1	0	ND,*1	0	ND,*1
8:2 Fluorotelemer unsaturated acid	0	ND	0	ND	0	ND	0	ND
5:3 Fluorotelomer carboxylic acid	0	ND	0	ND	0	ND	0	ND
3-Perfluoropropylpropanoic acid	0	ND	0	ND	0	ND	0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.041	J	0.049		0.044	J	0.045	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	0	ND	0	ND	0	ND	0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	0	ND, *-	0	ND, *-	0	ND, *-	0	ND, *-
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	0	ND	0	ND	0	ND	0	ND

0 = All fractions below analytical method detection limit

Project Qualifiers

ND = Below MDL, no detected mass

A = >30% breakthrough

x = compound was above MDL in FMSB

y = Proof Blank results is > 10% of sample mass

z = Field Blank results is > 10% of sample mass

Lab Qualifiers

*- LCS and/or LCSD is outside acceptance limits, low biased.

*+ LCS and/or LCSD is outside acceptance limits, high biased.

*1 LCS/LCSD RPD exceeds control limits.

*5- Isotope dilution analyte is outside acceptance limits, low biased.

*5+ Isotope dilution analyte is outside acceptance limits, high biased.

Cl The peak identified by the data system exhibited chromatographic interference that could not be resolved. There is reason to suspect there may be a high bias.

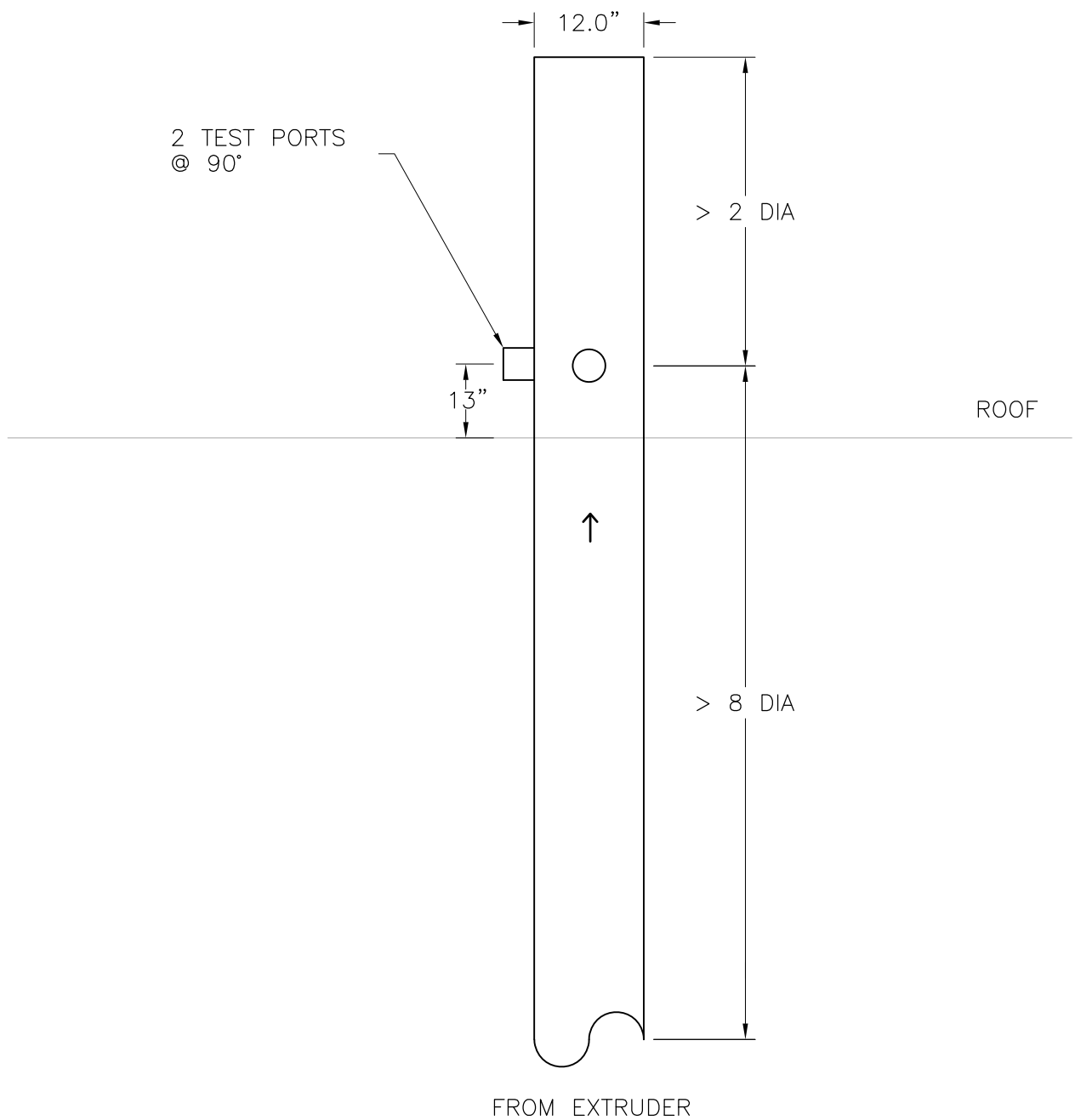
I Value is EMPC (estimated maximum possible concentration).

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

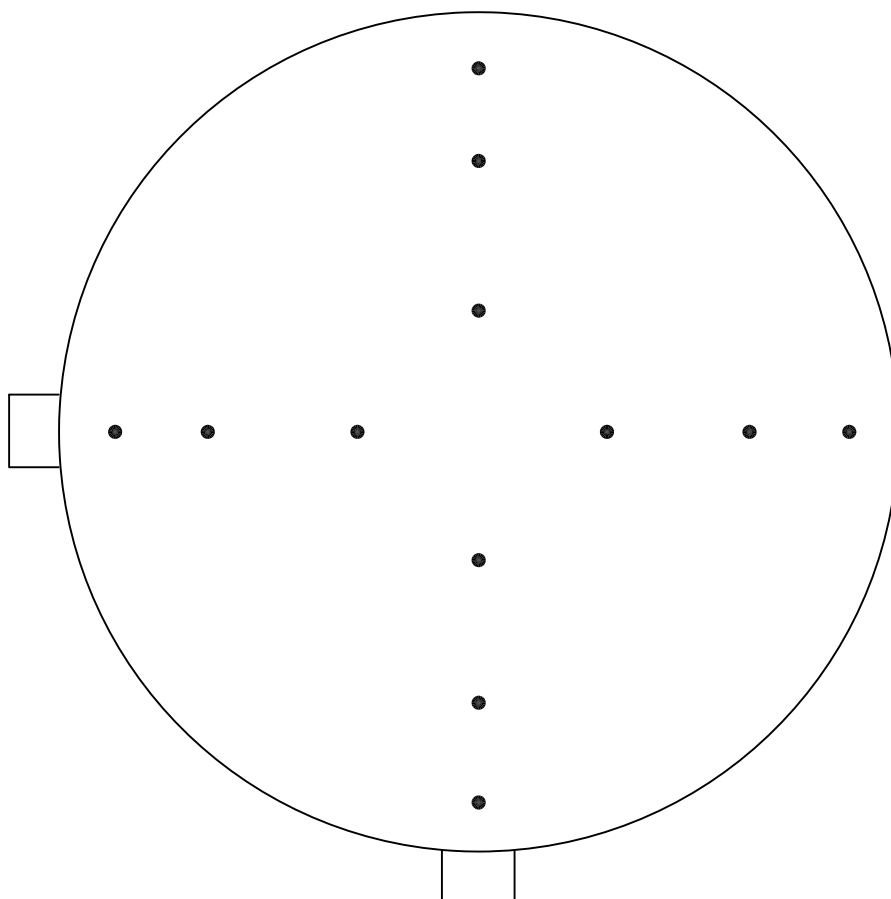
S1- Surrogate recovery exceeds control limits, low biased.

R Result Unusable

Figures



TEST PORT LOCATIONS
ZEUS COMPANY, INC.
ORANGEBURG, SOUTH CAROLINA
EXTRUDER EXHAUST



NO. OF TEST PORTS	2
PORT LENGTH	0.0"
PORT DIAMETER	4"
NO. OF TRAVERSE POINTS	12
DUCT DIAMETER	12.0"

POINT	INSERTION DEPTH IN "
1	0.52
2	1.76
3	3.55
4	8.45
5	10.24
6	11.48

TRAVERSE POINT LOCATIONS
ZEUS COMPANY, INC.
ORANGEBURG, SOUTH CAROLINA
EXTRUDER EXHAUST

NOT TO SCALE

FIGURE 2

Appendices

Appendix A

Report Calculations and Nomenclature

Determination of Volumetric Air Flow Rate, Gas Composition, Moisture Content, Meter Volume and Isokinetic Sampling
EPA Methods 2, 3, 4 and Isokinetics by OTM 45
Extruder Exhaust

Input Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Test Date	-	-	4/18/2023	4/18/2023	4/19/2023	--
Test Period	-	-	844 - 1148	1230 - 1534	813 - 1115	--
Number of Sample Ports	-	-	2	2	2	--
Number of Traverse Points	-	-	12	12	12	--
Duct Dimensions (diameter or Length x Width)	D, L X W	inches	12.00	12.00	12.00	--
Barometric Pressure	Pbar	in. Hg	29.75	29.75	29.90	29.80
Stack Static Pressure	Pg	in. H ₂ O	-3.70	-3.70	-3.70	-3.70
Average Stack Temperature	Tsf	degrees F	121	124	124	123.11
Actual Dry Gas Meter Volume	Vm	cubic feet	116.20	117.00	119.70	117.63
Dry Gas Meter Calibration Factor	Y	-	0.9953	0.9953	0.9953	0.9953
Average Orifice Meter Pressure Drop	DH	in H ₂ O	1.34	1.36	1.44	1.38
Average Meter Temperature	Tmf	degrees F	68.08	76.13	70.88	71.69
Pitot Tube Coefficient	Cp	-	0.84	0.84	0.84	0.84
Average Square Root of Velocity Head	(DP) ^{0.5}	-	0.589	0.590	0.613	0.597
Mass of Water Vapor Condensed in Impingers	Vwc	g	7.5	-5.4	5.2	2.4
Mass of Water Vapor Collected in Dessicant	Vwsg	g	17.4	23.9	23.6	21.6
Gas Composition, Dry Basis						
Oxygen	%O ₂	%v/v	20.0	20.9	20.9	20.6
Carbon Dioxide	%CO ₂	%v/v	0.5	0.03	0.03	0.2
Nitrogen + Carbon Monoxide (by difference)	%N ₂ + %CO	%v/v	79.5	79.1	79.1	79.2
Nozzle Diameter	Dn	inches	0.250	0.250	0.250	0.250
Run Time	theta	minutes	180	180	180	180
Calculated Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Average Absolute Stack Temperature Tsr = Tsf + 460	Tsr	degrees R	581	584	584	583
Stack Pressure Ps = Pbar + Pg / 13.6	Ps	in. Hg	29.48	29.48	29.63	29.53
Duct Area A = $\pi \times D^2 / (4 \times 144)$ or A = L x W / 144	A	Sq. ft	0.785	0.785	0.785	0.785
Meter Volume at Standard Conditions Vmstd = $17.64 \times Vm \times Y \times ((Pbar + (DH / 13.6)) / (Tmf + 460))$	Vmstd-ft3	cubic feet	115.31	114.37	118.78	116.16
Average Moisture Content of Stack Gas MC = $((0.04175 \times Vwc + 0.04715 \times Vwsg) / ((0.04715 \times Vwc + 0.04715 \times Vwsg) + (Vmstd)) \times 100$	MC	% Vol	1.01	0.76	1.13	0.97
Molecular Weight of Stack Gas, dry Md = $(0.44 \times \%CO_2) + (0.32 \times \%O_2) + (0.28 \times (\%N_2 + \%CO))$	Md	lb/lbmol	28.88	28.84	28.84	28.85
Molecular Weight of Stack Gas, wet Ms = $Md \times (1 - (MC/100)) + 18 \times (MC/100)$	Ms	lb/lbmol	28.77	28.76	28.72	28.75
Average Stack Gas Velocity Vs = $85.49 \times Cp \times (dP)^{0.5} \times ((Tsr/(Ps \times Ms))^{0.5})$	Vs	ft/sec	35.02	35.15	36.48	35.55
Actual Volumetric Air Flow Rate Qa = $60 \times Vs \times A$	Qa	acfm	1,650	1,656	1,719	1,675
Volumetric Air Flow Rate at Standard Conditions Qs = $Qa \times (528 / (Ts + 460)) \times (Ps / 29.92)$	Qs	scfm	1,477	1,476	1,538	1,497
Dry Volumetric Air Flow Rate at Standard Conditions Qd dscfm = $Qa \times (1 - (MC / 100)) \times (528 / Tsr) \times (Ps / 29.92)$	Qd	dscfm	1,462	1,465	1,521	1,483
Nozzle Cross-Sectional Area An = $(3.14 \times Dn^2) / (4 \times 144)$	An	sq. ft	0.000341	0.000341	0.000341	0.000341
Isokinetic Variation I = $(0.0945 \times Tsr \times Vmstd) / (Ps \times Vs \times An \times theta \times (1 - (MC / 100)))$	I	%	101.0	100.0	100.0	100.4

Determination of PFAS Concentration and Emission Rates
EPA OTM-45

Extruder Exhaust

	Symbol	Units	Run 1	Flag	Run 2	Flag	Run 3	Flag	Average	Flag
Test Date	-	-	4/18/2023		4/18/2023		4/19/2023		--	
Test Period	-	-	844 - 1148		1230 - 1534		813 - 1115		--	
Run Time	theta	min	180		180		180		180	
Meter Volume at Standard Conditions Vmstd	Vmstd-ft3	cubic feet	115.31		114.37		118.78		116.16	
Meter Volume at Standard Conditions Vmstd	Vmstd-m3	cubic meter	3.27		3.24		3.36		3.29	
Dry Volumetric Air Flow Rate at Standard Conditions (M2,M4, ISO Calcs)	Qd	DSCFM	1,462		1,465		1,521		1,483	
Pollutant Total Sample Mass, ng										
Perfluorobutanoic acid (PFBA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Perfluoropentanoic acid (PFPeA)	Poll-Mass	ng	104		0	ND	39.3	J	48	J
Perfluorohexanoic acid (PFHxA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0.0	ND
Perfluoroheptanoic acid (PFHpA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0.0	ND
Perfluorooctanoic acid (PFOA)	Poll-Mass	ng	0	ND, x, y	0	ND, x, y	0	ND, x	0.0	ND, x, y
Perfluorononanoic acid (PFNA)	Poll-Mass	ng	4.76	J	0	ND	1.46	J	2.07	J
Perfluorodecanoic acid (PFDA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Perfluoroundecanoic acid (PFUnA)	Poll-Mass	ng	6.80	J	0	ND	0	ND	2	J
Perfluorododecanoic acid (PFDoA)	Poll-Mass	ng	0	ND	1.21	J	0	ND	0.40	J
Perfluorotridecanoic acid (PFTriA)	Poll-Mass	ng	9.79	-	3.48	J, -	2.52	J, -	5.26	J, -
Perfluorotetradecanoic acid (PFTeA)	Poll-Mass	ng	3.93	J	2.60	J	0	ND	2.18	J
Perfluorobutanesulfonic acid (PFBS)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Perfluorohexanesulfonic acid (PFHxS)	Poll-Mass	ng	0	ND	0	ND	0	ND	0.000	ND
Perfluoroheptanesulfonic acid (PFHpS)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Perfluorooctanesulfonic acid (PFOS)	Poll-Mass	ng	0.715	I, CI	0	ND	0	ND	0.238	I, CI
Perfluorodecanesulfonic acid (PFDS)	Poll-Mass	ng	0	ND, -	0	ND, -	0	ND, -	0	-
Perfluorooctanesulfonamide (FOSA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Perfluoropentanesulfonic acid (PFPeS)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Perfluorononanesulfonic acid (PFNS)	Poll-Mass	ng	0	ND, -	0	ND, -	0	ND, -	0	ND, -
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0.000	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0.000	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	Poll-Mass	ng	0	ND, -	0	ND, -	0	ND, -	0	ND, -
11-Chloroicosadecafluoro-3-oxaundecane-1-sulfonic acid	Poll-Mass	ng	0	ND, -	0	ND, -	0	ND, -	0	ND, -
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	Poll-Mass	ng	3020	*+	8973	J, *+	4349	*+	5447	J, *+
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	Poll-Mass	ng	0	ND	0	ND	0	ND	0.000	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-octadecanoic acid (PFODA)	Poll-Mass	ng	0	ND, -, *1	0	ND, -, *1	0	ND, -, *1	0	ND, -, *1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0.000	ND
N-ethylperfluorooctane sulfonamide (NEtFOSA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0.000	ND
Perfluorododecanesulfonic acid (PFDoS)	Poll-Mass	ng	0	ND, -, *1	0	ND, -, *1	0	ND, -, *1	0	ND, -, *1
Nonadecafluoro-3,6-dioxahexanoic acid (NFDHA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
10:2 Fluorotelomer carboxylic acid	Poll-Mass	ng	0	ND,	0	ND	0	ND,	0.000	ND
6:2 Fluorotelomer carboxylic acid	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
7:3 Fluorotelomer carboxylic acid	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
6:2 Fluorotelemer unsaturated acid	Poll-Mass	ng	0	ND	0	ND	0	ND	0.000	ND
8:2 Fluorotelomer carboxylic acid	Poll-Mass	ng	0	ND, *1	0	ND, *1	0	ND, *1	0	ND, *1
8:2 Fluorotelemer unsaturated acid	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
5:3 Fluorotelomer carboxylic acid	Poll-Mass	ng	0	ND	0	ND	0	ND	0.000	ND
3-Perfluoropropylpropanoic acid (PFMPA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	Poll-Mass	ng	2813	J	3290		3107.19	J	3070	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0.000	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	Poll-Mass	ng	0	ND, -	0	ND, -	0	ND, -	0	ND, -
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	Poll-Mass	ng	0	ND	0	ND	0	ND	0	ND

Determination of PFAS Concentration and Emission Rates
EPA OTM-45

Extruder Exhaust

Calculated Data	Symbol	Units	Run 1	Flag	Run 2	Flag	Run 3	Flag	Average	Flag
Pollutant Concentration, lb/dscf =Total Train mass, ng x 2.2046e-12/Vstd-ft3										
Perfluorobutanoic acid (PFBA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluoropentanoic acid (PFPeA)	Conc	lb/dscf	1.99E-12		0	ND	7.29E-13	J	9.06E-13	J
Perfluorohexanoic acid (PFHxA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanoic acid (PFHpA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluorooctanoic acid (PFOA)	Conc	lb/dscf	0	ND, x, y	0	ND, x, y	0	ND, x	0	ND, x,y
Perfluorononanoic acid (PFNA)	Conc	lb/dscf	9.10E-14	J	0	ND	2.71E-14	J	3.94E-14	J
Perfluorodecanoic acid (PFDA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluoroundecanoic acid (PFUnA)	Conc	lb/dscf	1.30E-13	J	0	ND	0	ND	4.33E-14	J
Perfluorododecanoic acid (PFDoA)	Conc	lb/dscf	0	ND	2.33E-14	J	0	ND	7.77E-15	J
Perfluorotridecanoic acid (PFTriA)	Conc	lb/dscf	1.87E-13	*,	6.71E-14	J, *	4.68E-14	J, *	1.00E-13	J, *
Perfluorotetradecanoic acid (PFTeA)	Conc	lb/dscf	7.51E-14	J	5.01E-14	J	0	ND	4.18E-14	J
Perfluorobutanesulfonic acid (PFBS)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluorohexanesulfonic acid (PFHxS)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanesulfonic acid (PFHpS)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluorooctanesulfonic acid (PFOS)	Conc	lb/dscf	1.37E-14	I, CI	0	ND	0	ND	4.56E-15	I, CI
Perfluorodecanesulfonic acid (PFDS)	Conc	lb/dscf	0	ND, *	0	ND, *	0	ND, *	0	*,
Perfluorooctanesulfonamide (FOSA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluoropentanesulfonic acid (PFPeS)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluorononanesulfonic acid (PFNS)	Conc	lb/dscf	0	ND, *	0	ND, *	0	ND, *	0	ND, *
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	Conc	lb/dscf	0	ND, *	0	ND, *	0	ND, *	0	ND, *
11-Chloroicosadecafluoro-3-oxaundecane-1-sulfonic acid	Conc	lb/dscf	0	ND, *	0	ND, *	0	ND, *	0	ND, *
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	Conc	lb/dscf	5.77E-11	*,	1.73E-10	J, *	8.07E-11	*,	1.04E-10	J, *
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
2-(N-ethylperfluoro-1-oxanesulfonamido) ethanol	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-octadecanoic acid (PFODA)	Conc	lb/dscf	0	ND, *, *1	0	ND, *, *1	0	ND, *, *1	0	ND, *, *1
2-(N-methylperfluoro-1-oxanesulfonamido) ethanol	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctane sulfonamide (NEtFOSA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluorododecanesulfonic acid (PFDoS)	Conc	lb/dscf	0	ND, *, *1	0	ND, *, *1	0	ND, *, *1	0	ND, *, *1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
10:2 Fluorotelomer carboxylic acid	Conc	lb/dscf	0	ND,	0	ND	0	ND,	0	ND
6:2 Fluorotelomer carboxylic acid	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
7:3 Fluorotelomer carboxylic acid	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
6:2 Fluorotelemer unsaturated acid	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
8:2 Fluorotelomer carboxylic acid	Conc	lb/dscf	0	ND, *1	0	ND, *1	0	ND, *1	0	ND, *1
8:2 Fluorotelemer unsaturated acid	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
5:3 Fluorotelomer carboxylic acid	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
3-Perfluoropropylpropanoic acid	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	Conc	lb/dscf	5.38E-11	J	6.34E-11		5.77E-11	J	5.83E-11	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	Conc	lb/dscf	0	ND, *	0	ND, *	0	ND, *	0	ND, *
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	Conc	lb/dscf	0	ND	0	ND	0	ND	0	ND

Determination of PFAS Concentration and Emission Rates
EPA OTM-45

Extruder Exhaust

Calculated Data	Symbol	Units	Run 1	Flag	Run 2	Flag	Run 3	Flag	Average	Flag
Pollutant Emission Rate, lb/hr =Conc lb/dscf x 60 min x Qd										
Perfluorobutanoic acid (PFBA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluoropentanoic acid (PFPeA)	ER	lb/hr	1.74E-07		0	ND	6.4E-08	J	7.9E-08	J
Perfluorohexanoic acid (PFHxA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanoic acid (PFHpA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluorooctanoic acid (PFOA)	ER	lb/hr	0	ND, x, y	0	ND, x, y	0	ND, x	0	ND, x, y
Perfluorononanoic acid (PFNA)	ER	lb/hr	7.98E-09	J	0	ND	2.4E-09	J	3.5E-09	J
Perfluorodecanoic acid (PFDA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluoroundecanoic acid (PFUnA)	ER	lb/hr	1.14E-08	J	0	ND	0	ND	3.8E-09	J
Perfluorododecanoic acid (PFDoA)	ER	lb/hr	0	ND	2.1E-09	J	0	ND	6.8E-10	J
Perfluorotridecanoic acid (PFTriA)	ER	lb/hr	1.64E-08	*,	5.9E-09	J, *	4.1E-09	J, *	8.8E-09	J, *
Perfluorotetradecanoic acid (PFTeA)	ER	lb/hr	6.59E-09	J	4.4E-09	J	0	ND	3.7E-09	J
Perfluorobutanesulfonic acid (PFBS)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluorohexanesulfonic acid (PFHxS)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanesulfonic acid (PFHpS)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluorooctanesulfonic acid (PFOS)	ER	lb/hr	1.20E-09	I, CI	0	ND	0	ND	4.0E-10	I, CI
Perfluorodecanesulfonic acid (PFDS)	ER	lb/hr	0	ND, *	0	ND, *	0	ND, *	0	*,
Perfluorooctanesulfonamide (FOSA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluoropentanesulfonic acid (PFPeS)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluorononanesulfonic acid (PFNS)	ER	lb/hr	0	ND, *	0	ND, *	0	ND, *	0	ND, *
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
1H,1H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (10:2 FTS)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ER	lb/hr	0	ND, *	0	ND, *	0	ND, *	0	ND, *
11-Chloroheptafluoro-3-oxaundecane-1-sulfonic acid	ER	lb/hr	0	ND, *	0	ND, *	0	ND, *	0	ND, *
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ER	lb/hr	5.07E-06	*,	1.5E-05	J, *	7.1E-06	*,	9.1E-06	J, *
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-octadecanoic acid (PFODA)	ER	lb/hr	0	ND, *, *1	0	ND, *, *1	0	ND, *, *1	0	ND, *, *1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluorododecanesulfonic acid (PFDoS)	ER	lb/hr	0	ND, *, *1	0	ND, *, *1	0	ND, *, *1	0	ND, *, *1
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
10:2 Fluorotelomer carboxylic acid	ER	lb/hr	0	ND,	0	ND	0	ND,	0	ND
6:2 Fluorotelomer carboxylic acid	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
7:3 Fluorotelomer carboxylic acid	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
6:2 Fluorotelomer unsaturated acid	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
8:2 Fluorotelomer carboxylic acid	ER	lb/hr	0	ND, *1	0	ND, *1	0	ND, *1	0	ND, *1
8:2 Fluorotelomer unsaturated acid	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
5:3 Fluorotelomer carboxylic acid	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
3-Perfluoropropylpropanoic acid	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	ER	lb/hr	4.72E-06	J	5.6E-06		5.1E-06	J	5.1E-06	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	ER	lb/hr	0	ND, *	0	ND, *	0	ND, *	0	ND, *
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ER	lb/hr	0	ND	0	ND	0	ND	0	ND

Determination of PFAS Concentration and Emission Rates
EPA OTM-45

Extruder Exhaust

Calculated Data	Symbol	Units	Run 1	Flag	Run 2	Flag	Run 3	Flag	Average	Flag
Pollutant Emission Rate, lb/yr =Pollutant ER lb/hr x 8760 hours/year										
Perfluorobutanoic acid (PFBA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluoropentanoic acid (PFPeA)	ER	lb/yr	0.001528		0	ND	0.000560	J	0.000696	J
Perfluorohexanoic acid (PFHxA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanoic acid (PFHpA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluorooctanoic acid (PFOA)	ER	lb/yr	0	ND, x, y	0	ND, x, y	0	ND, x	0	ND, x, y
Perfluorononanoic acid (PFNA)	ER	lb/yr	0.000070	J	0	ND	0.000021	J	0.000030	J
Perfluorodecanoic acid (PFDA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluoroundecanoic acid (PFUnA)	ER	lb/yr	0.000100	J	0	ND	0	ND	0.000033	J
Perfluorododecanoic acid (PFDoA)	ER	lb/yr	0	ND	0.000018	J	0	ND	0.000006	J
Perfluorotridecanoic acid (PFTriA)	ER	lb/yr	0.000144	-	0.000052	J, -	0.000036	J, -	0.000077	J, -
Perfluorotetradecanoic acid (PFTeA)	ER	lb/yr	0.000058	J	0.000039	J	0	ND	0.000032	J
Perfluorobutanesulfonic acid (PFBS)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluorohexanesulfonic acid (PFHxS)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluoroheptanesulfonic acid (PFHpS)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluorooctanesulfonic acid (PFOS)	ER	lb/yr	0.000011	I, CI	0	ND	0	ND	0.000004	I, CI
Perfluorodecanesulfonic acid (PFDS)	ER	lb/yr	0	ND, -	0	ND, -	0	ND, -	0	-
Perfluorooctanesulfonamide (FOSA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluoropentanesulfonic acid (PFPeS)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluorononanesulfonic acid (PFNS)	ER	lb/yr	0	ND, -	0	ND, -	0	ND, -	0	ND, -
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEFOSAA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ER	lb/yr	0	ND, -	0	ND, -	0	ND, -	0	ND, -
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ER	lb/yr	0	ND, -	0	ND, -	0	ND, -	0	ND, -
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ER	lb/yr	0.044	*+	0.133	J, *+	0.062	*+	0.080	J, *+
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-octadecanoic acid (PFODA)	ER	lb/yr	0	ND, -, *1	0	ND, -, *1	0	ND, -, *1	0	ND, -, *1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
N-ethylperfluorooctane sulfonamide (NEFOSA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluorododecanesulfonic acid (PFDoS)	ER	lb/yr	0	ND, -, *1	0	ND, -, *1	0	ND, -, *1	0	ND, -, *1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
10:2 Fluorotelomer carboxylic acid	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
6:2 Fluorotelomer carboxylic acid	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
7:3 Fluorotelomer carboxylic acid	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
6:2 Fluorotelemer unsaturated acid	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
8:2 Fluorotelomer carboxylic acid	ER	lb/yr	0	ND, *1	0	ND, *1	0	ND, *1	0	ND, *1
8:2 Fluorotelemer unsaturated acid	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
5:3 Fluorotelomer carboxylic acid	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
3-Perfluoropropylpropanoic acid	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	ER	lb/yr	0.041	J	0.049		0.044	J	0.045	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	ER	lb/yr	0	ND, -	0	ND, -	0	ND, -	0	ND, -
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ER	lb/yr	0	ND	0	ND	0	ND	0	ND

0 = below analytical detection limit

PFAS Results at Minimum Detection Limit (MDL)
EPA OTM-45

Extruder Exhaust

Input Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Test Date	-	-	4/18/2023	4/18/2023	4/19/2023	--
Test Period	-	-	844 - 1148	1230 - 1534	813 - 1115	--
Run Time	theta	min	180	180	180	180
Meter Volume at Standard Conditions Vmstd	Vmstd-ft3	cubic feet	115.31	114.37	118.78	116.16
Meter Volume at Standard Conditions Vmstd	Vmstd-m3	cubic meter	3.27	3.24	3.36	3.29
Dry Volumetric Air Flow Rate at Standard Conditions (M2,M4, ISO Calcs)	Qd	dscfm	1,462	1,465	1,521	1,483
Pollutant Total Sample Mass at MDL (Sum Fractions 1,2,3), ng						
Perfluorobutanoic acid (PFBA)	MDL	ng	965.9	953.0	579.2	832.7
Perfluoropentanoic acid (PFPeA)	MDL	ng	48.6	46.9	29.0	41.5
Perfluorohexanoic acid (PFHxA)	MDL	ng	56.4	54.3	33.6	48.1
Perfluoroheptanoic acid (PFHpA)	MDL	ng	272.4	266.3	163.4	234.0
Perfluorooctanoic acid (PFOA)	MDL	ng	78.9	72.5	46.4	65.9
Perfluorononanoic acid (PFNA)	MDL	ng	90.7	89.9	54.5	78.4
Perfluorodecanoic acid (PFDA)	MDL	ng	26.0	23.5	15.3	21.6
Perfluoroundecanoic acid (PFUnA)	MDL	ng	30.5	28.8	18.1	25.8
Perfluorododecanoic acid (PFDoA)	MDL	ng	14.0	13.1	8.3	11.8
Perfluorotridecanoic acid (PFTriA)	MDL	ng	19.9	18.5	11.7	16.7
Perfluorotetradecanoic acid (PFTeA)	MDL	ng	26.5	24.8	15.7	22.3
Perfluorobutanesulfonic acid (PFBS)	MDL	ng	69.7	60.8	40.3	56.9
Perfluorohexanesulfonic acid (PFHxS)	MDL	ng	28.2	27.2	16.9	24.1
Perfluoroheptanesulfonic acid (PFHpS)	MDL	ng	22.3	21.2	13.2	18.9
Perfluorooctanesulfonic acid (PFOS)	MDL	ng	24.0	19.5	13.6	19.0
Perfluorodecanesulfonic acid (PFDS)	MDL	ng	22.3	21.2	13.2	18.9
Perfluorooctanesulfonamide (FOSA)	MDL	ng	25.0	24.1	15.0	21.4
Perfluoropentanesulfonic acid (PFPeS)	MDL	ng	23.4	22.3	14.0	19.9
Perfluorononanesulfonic acid (PFNS)	MDL	ng	18.4	17.2	10.9	15.5
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MDL	ng	14.5	13.3	8.6	12.1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MDL	ng	21.9	20.5	12.9	18.4
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	MDL	ng	8.3	7.4	4.8	6.8
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	MDL	ng	949.2	909.6	564.2	807.6
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	MDL	ng	18.9	17.5	11.2	15.9
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	MDL	ng	1193.1	1146.6	710.3	1016.7
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	MDL	ng	20.0	19.0	11.9	17.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	MDL	ng	22.0	20.1	12.9	18.3
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	MDL	ng	112.9	111.6	67.9	97.5
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	MDL	ng	23.4	20.3	13.5	19.1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	MDL	ng	39.6	38.6	23.7	34.0
Perfluoro-n-octadecanoic acid (PFODA)	MDL	ng	68.5	66.3	41.0	58.6
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	MDL	ng	2076.9	1981.3	1239.1	1765.8
N-methylperfluorooctane sulfonamide (NMeFOSA)	MDL	ng	80.1	78.6	48.0	68.9
N-ethylperfluorooctane sulfonamide (NEtFOSA)	MDL	ng	69.3	67.7	41.6	59.5
Perfluoro-n-hexadecanoic acid (PFHxDA)	MDL	ng	34.9	32.0	20.6	29.2
Perfluorododecanesulfonic acid (PFDoS)	MDL	ng	20.0	19.0	11.8	17.0
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MDL	ng	19.1	17.7	11.3	16.0
10:2 Fluorotelomer carboxylic acid	MDL	ng	60.7	56.5	35.9	51.0
6:2 Fluorotelomer carboxylic acid	MDL	ng	108.9	104.6	64.9	92.8
7:3 Fluorotelomer carboxylic acid	MDL	ng	63.4	59.9	37.7	53.6
6:2 Fluorotelomer unsaturated acid	MDL	ng	22.9	21.5	13.5	19.3
8:2 Fluorotelomer carboxylic acid	MDL	ng	45.3	41.9	26.8	38.0
8:2 Fluorotelomer unsaturated acid	MDL	ng	24.6	22.4	14.4	20.5
5:3 Fluorotelomer carboxylic acid	MDL	ng	79.8	75.1	47.4	67.4
3-Perfluoropropylpropanoic acid	MDL	ng	37.0	34.1	21.9	31.0
Perfluoro-3-methoxypropanoic acid (PFMPA)	MDL	ng	15.1	13.7	8.9	12.6
Perfluoro-4-methoxybutanoic acid (PFMBA)	MDL	ng	17.2	15.2	10.1	14.2
Perfluoro-4-ethylcyclohexanesulfonic acid	MDL	ng	18.5	16.4	10.8	15.2
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	MDL	ng	12.9	11.5	7.6	10.7

PFAS Results at Minimum Detection Limit (MDL)
EPA OTM-45

Extruder Exhaust

Calculated Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Pollutant Concentration, lb/dscf						
=Total Train mass, ng x 2.2046e-12/Vstd-ft3						
Perfluorobutanoic acid (PFBA)	MDL-Conc	lb/dscf	1.8E-11	1.8E-11	1.1E-11	1.6E-11
Perfluoropentanoic acid (PFPeA)	MDL-Conc	lb/dscf	9.3E-13	9.0E-13	5.4E-13	7.9E-13
Perfluorohexanoic acid (PFHxA)	MDL-Conc	lb/dscf	1.1E-12	1.0E-12	6.2E-13	9.2E-13
Perfluoroheptanoic acid (PFHpA)	MDL-Conc	lb/dscf	5.2E-12	5.1E-12	3.0E-12	4.5E-12
Perfluorooctanoic acid (PFOA)	MDL-Conc	lb/dscf	1.5E-12	1.4E-12	8.6E-13	1.3E-12
Perfluorononanoic acid (PFNA)	MDL-Conc	lb/dscf	1.7E-12	1.7E-12	1.0E-12	1.5E-12
Perfluorodecanoic acid (PFDA)	MDL-Conc	lb/dscf	5.0E-13	4.5E-13	2.8E-13	4.1E-13
Perfluoroundecanoic acid (PFUnA)	MDL-Conc	lb/dscf	5.8E-13	5.5E-13	3.4E-13	4.9E-13
Perfluorododecanoic acid (PFDoA)	MDL-Conc	lb/dscf	2.7E-13	2.5E-13	1.5E-13	2.2E-13
Perfluorotridecanoic acid (PFTrIA)	MDL-Conc	lb/dscf	3.8E-13	3.6E-13	2.2E-13	3.2E-13
Perfluorotetradecanoic acid (PFTeA)	MDL-Conc	lb/dscf	5.1E-13	4.8E-13	2.9E-13	4.3E-13
Perfluorobutanesulfonic acid (PFBS)	MDL-Conc	lb/dscf	1.3E-12	1.2E-12	7.5E-13	1.1E-12
Perfluorohexanesulfonic acid (PFHxS)	MDL-Conc	lb/dscf	5.4E-13	5.2E-13	3.1E-13	4.6E-13
Perfluoroheptanesulfonic acid (PFHpS)	MDL-Conc	lb/dscf	4.3E-13	4.1E-13	2.5E-13	3.6E-13
Perfluorooctanesulfonic acid (PFOS)	MDL-Conc	lb/dscf	4.6E-13	3.8E-13	2.5E-13	3.6E-13
Perfluorodecanesulfonic acid (PFDS)	MDL-Conc	lb/dscf	4.3E-13	4.1E-13	2.5E-13	3.6E-13
Perfluorooctanesulfonamide (FOSA)	MDL-Conc	lb/dscf	4.8E-13	4.6E-13	2.8E-13	4.1E-13
Perfluoropentanesulfonic acid (PFPeS)	MDL-Conc	lb/dscf	4.5E-13	4.3E-13	2.6E-13	3.8E-13
Perfluorononanesulfonic acid (PFNS)	MDL-Conc	lb/dscf	3.5E-13	3.3E-13	2.0E-13	3.0E-13
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MDL-Conc	lb/dscf	2.8E-13	2.6E-13	1.6E-13	2.3E-13
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MDL-Conc	lb/dscf	4.2E-13	3.9E-13	2.4E-13	3.5E-13
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	MDL-Conc	lb/dscf	1.6E-13	1.4E-13	9.0E-14	1.3E-13
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	MDL-Conc	lb/dscf	1.8E-11	1.8E-11	1.0E-11	1.5E-11
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	MDL-Conc	lb/dscf	3.6E-13	3.4E-13	2.1E-13	3.0E-13
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	MDL-Conc	lb/dscf	2.3E-11	2.2E-11	1.3E-11	1.9E-11
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	MDL-Conc	lb/dscf	3.8E-13	3.7E-13	2.2E-13	3.2E-13
11-Chloroicosafafluoro-3-oxaundecane-1-sulfonic acid	MDL-Conc	lb/dscf	4.2E-13	3.9E-13	2.4E-13	3.5E-13
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	MDL-Conc	lb/dscf	2.2E-12	2.2E-12	1.3E-12	1.9E-12
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	MDL-Conc	lb/dscf	4.5E-13	3.9E-13	2.5E-13	3.6E-13
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	MDL-Conc	lb/dscf	7.6E-13	7.4E-13	4.4E-13	6.5E-13
Perfluoro-n-octadecanoic acid (PFODA)	MDL-Conc	lb/dscf	1.3E-12	1.3E-12	7.6E-13	1.1E-12
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	MDL-Conc	lb/dscf	4.0E-11	3.8E-11	2.3E-11	3.4E-11
N-methylperfluorooctane sulfonamide (NMeFOSA)	MDL-Conc	lb/dscf	1.5E-12	1.5E-12	8.9E-13	1.3E-12
N-ethylperfluorooctane sulfonamide (NEtFOSA)	MDL-Conc	lb/dscf	1.3E-12	1.3E-12	7.7E-13	1.1E-12
Perfluoro-n-hexadecanoic acid (PFHxDA)	MDL-Conc	lb/dscf	6.7E-13	6.2E-13	3.8E-13	5.6E-13
Perfluorododecanesulfonic acid (PFDoS)	MDL-Conc	lb/dscf	3.8E-13	3.7E-13	2.2E-13	3.2E-13
Nonafafluoro-3,6-dioxaheptanoic acid (NFDHA)	MDL-Conc	lb/dscf	3.7E-13	3.4E-13	2.1E-13	3.1E-13
10:2 Fluorotelomer carboxylic acid	MDL-Conc	lb/dscf	1.2E-12	1.1E-12	6.7E-13	9.7E-13
6:2 Fluorotelomer carboxylic acid	MDL-Conc	lb/dscf	2.1E-12	2.0E-12	1.2E-12	1.8E-12
7:3 Fluorotelomer carboxylic acid	MDL-Conc	lb/dscf	1.2E-12	1.2E-12	7.0E-13	1.0E-12
6:2 Fluorotelomer unsaturated acid	MDL-Conc	lb/dscf	4.4E-13	4.1E-13	2.5E-13	3.7E-13
8:2 Fluorotelomer carboxylic acid	MDL-Conc	lb/dscf	8.7E-13	8.1E-13	5.0E-13	7.2E-13
8:2 Fluorotelomer unsaturated acid	MDL-Conc	lb/dscf	4.7E-13	4.3E-13	2.7E-13	3.9E-13
5:3 Fluorotelomer carboxylic acid	MDL-Conc	lb/dscf	1.5E-12	1.4E-12	8.8E-13	1.3E-12
3-Perfluoropropylpropanoic acid	MDL-Conc	lb/dscf	7.1E-13	6.6E-13	4.1E-13	5.9E-13
Perfluoro-3-methoxypropanoic acid (PFMPA)	MDL-Conc	lb/dscf	2.9E-13	2.6E-13	1.7E-13	2.4E-13
Perfluoro-4-methoxybutanoic acid (PFMBA)	MDL-Conc	lb/dscf	3.3E-13	2.9E-13	1.9E-13	2.7E-13
Perfluoro-4-ethylcyclohexanesulfonic acid	MDL-Conc	lb/dscf	3.5E-13	3.2E-13	2.0E-13	2.9E-13
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	MDL-Conc	lb/dscf	2.5E-13	2.2E-13	1.4E-13	2.0E-13

PFAS Results at Minimum Detection Limit (MDL)
EPA OTM-45

Extruder Exhaust

Calculated Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Pollutant Emission Rate, lb/hr						
=Poll Mass, ng x 2.204 e-12 x 60 min x Qd-dscfm						
Perfluorobutanoic acid (PFBA)	MDL-ER	lb/hr	1.62E-06	1.61E-06	9.81E-07	1.41E-06
Perfluoropentanoic acid (PFPeA)	MDL-ER	lb/hr	8.16E-08	7.94E-08	4.91E-08	7.00E-08
Perfluorohexanoic acid (PFHxA)	MDL-ER	lb/hr	9.46E-08	9.20E-08	5.70E-08	8.12E-08
Perfluoroheptanoic acid (PFHpA)	MDL-ER	lb/hr	4.57E-07	4.51E-07	2.77E-07	3.95E-07
Perfluorooctanoic acid (PFOA)	MDL-ER	lb/hr	1.32E-07	1.23E-07	7.86E-08	1.11E-07
Perfluorononanoic acid (PFNA)	MDL-ER	lb/hr	1.52E-07	1.52E-07	9.23E-08	1.32E-07
Perfluorodecanoic acid (PFDA)	MDL-ER	lb/hr	4.36E-08	3.99E-08	2.59E-08	3.65E-08
Perfluoroundecanoic acid (PFUnA)	MDL-ER	lb/hr	5.11E-08	4.87E-08	3.06E-08	4.35E-08
Perfluorododecanoic acid (PFDoA)	MDL-ER	lb/hr	2.36E-08	2.21E-08	1.40E-08	1.99E-08
Perfluorotridecanoic acid (PFTriA)	MDL-ER	lb/hr	3.33E-08	3.13E-08	1.98E-08	2.81E-08
Perfluorotetradecanoic acid (PFTeA)	MDL-ER	lb/hr	4.44E-08	4.20E-08	2.67E-08	3.77E-08
Perfluorobutanesulfonic acid (PFBS)	MDL-ER	lb/hr	1.17E-07	1.03E-07	6.82E-08	9.60E-08
Perfluorohexanesulfonic acid (PFHxS)	MDL-ER	lb/hr	4.74E-08	4.60E-08	2.86E-08	4.06E-08
Perfluoroheptanesulfonic acid (PFHpS)	MDL-ER	lb/hr	3.74E-08	3.60E-08	2.24E-08	3.19E-08
Perfluorooctanesulfonic acid (PFOS)	MDL-ER	lb/hr	4.02E-08	3.31E-08	2.31E-08	3.21E-08
Perfluorodecanesulfonic acid (PFDS)	MDL-ER	lb/hr	3.74E-08	3.59E-08	2.24E-08	3.19E-08
Perfluorooctanesulfonamide (FOSA)	MDL-ER	lb/hr	4.19E-08	4.09E-08	2.54E-08	3.61E-08
Perfluoropentanesulfonic acid (PFPeS)	MDL-ER	lb/hr	3.93E-08	3.77E-08	2.37E-08	3.36E-08
Perfluorononanesulfonic acid (PFNS)	MDL-ER	lb/hr	3.09E-08	2.92E-08	1.84E-08	2.62E-08
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MDL-ER	lb/hr	2.43E-08	2.25E-08	1.45E-08	2.04E-08
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MDL-ER	lb/hr	3.67E-08	3.47E-08	2.18E-08	3.11E-08
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	MDL-ER	lb/hr	1.39E-08	1.25E-08	8.20E-09	1.15E-08
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	MDL-ER	lb/hr	1.59E-06	1.54E-06	9.56E-07	1.36E-06
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	MDL-ER	lb/hr	3.17E-08	2.97E-08	1.90E-08	2.68E-08
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	MDL-ER	lb/hr	2.00E-06	1.94E-06	1.20E-06	1.72E-06
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	MDL-ER	lb/hr	3.36E-08	3.23E-08	2.01E-08	2.86E-08
11-Chloroicosadecafluoro-3-oxaundecane-1-sulfonic acid	MDL-ER	lb/hr	3.70E-08	3.40E-08	2.18E-08	3.09E-08
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	MDL-ER	lb/hr	1.89E-07	1.89E-07	1.15E-07	1.64E-07
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	MDL-ER	lb/hr	3.93E-08	3.44E-08	2.29E-08	3.22E-08
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	MDL-ER	lb/hr	6.64E-08	6.54E-08	4.02E-08	5.73E-08
Perfluoro-n-octadecanoic acid (PFODA)	MDL-ER	lb/hr	1.15E-07	1.12E-07	6.94E-08	9.89E-08
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	MDL-ER	lb/hr	3.48E-06	3.36E-06	2.10E-06	2.98E-06
N-methylperfluorooctane sulfonamide (NMeFOSA)	MDL-ER	lb/hr	1.34E-07	1.33E-07	8.13E-08	1.16E-07
N-ethylperfluorooctane sulfonamide (NEtFOSA)	MDL-ER	lb/hr	1.16E-07	1.15E-07	7.04E-08	1.00E-07
Perfluoro-n-hexadecanoic acid (PFHxDA)	MDL-ER	lb/hr	5.85E-08	5.43E-08	3.48E-08	4.92E-08
Perfluorododecanesulfonic acid (PFDoS)	MDL-ER	lb/hr	3.35E-08	3.23E-08	2.01E-08	2.86E-08
Nonadecafluoro-3,6-dioxahexanoic acid (NFDHA)	MDL-ER	lb/hr	3.21E-08	2.99E-08	1.92E-08	2.71E-08
10:2 Fluorotelomer carboxylic acid	MDL-ER	lb/hr	1.02E-07	9.57E-08	6.07E-08	8.61E-08
6:2 Fluorotelomer carboxylic acid	MDL-ER	lb/hr	1.83E-07	1.77E-07	1.10E-07	1.57E-07
7:3 Fluorotelomer carboxylic acid	MDL-ER	lb/hr	1.06E-07	1.02E-07	6.38E-08	9.05E-08
6:2 Fluorotelomer unsaturated acid	MDL-ER	lb/hr	3.84E-08	3.64E-08	2.29E-08	3.26E-08
8:2 Fluorotelomer carboxylic acid	MDL-ER	lb/hr	7.60E-08	7.09E-08	4.54E-08	6.41E-08
8:2 Fluorotelomer unsaturated acid	MDL-ER	lb/hr	4.12E-08	3.80E-08	2.45E-08	3.46E-08
5:3 Fluorotelomer carboxylic acid	MDL-ER	lb/hr	1.34E-07	1.27E-07	8.02E-08	1.14E-07
3-Perfluoropropylpropanoic acid	MDL-ER	lb/hr	6.20E-08	5.78E-08	3.70E-08	5.23E-08
Perfluoro-3-methoxypropanoic acid (PFMPA)	MDL-ER	lb/hr	2.54E-08	2.31E-08	1.51E-08	2.12E-08
Perfluoro-4-methoxybutanoic acid (PFMBA)	MDL-ER	lb/hr	2.88E-08	2.58E-08	1.71E-08	2.39E-08
Perfluoro-4-ethylcyclohexanesulfonic acid	MDL-ER	lb/hr	3.11E-08	2.77E-08	1.83E-08	2.57E-08
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	MDL-ER	lb/hr	2.17E-08	1.95E-08	1.28E-08	1.80E-08

PFAS Results at Minimum Detection Limit (MDL)
EPA OTM-45

Extruder Exhaust

Calculated Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Pollutant Emission Rate, lb/yr						
=Pollutant ER lb/hr x 8760 hours/year						
Perfluorobutanoic acid (PFBA)	MDL-ER	lb/yr	0.0142	0.0141	0.0086	0.0123
Perfluoropentanoic acid (PFPeA)	MDL-ER	lb/yr	0.0007	0.0007	0.0004	0.0006
Perfluorohexanoic acid (PFHxA)	MDL-ER	lb/yr	0.0008	0.0008	0.0005	0.0007
Perfluoroheptanoic acid (PFHpA)	MDL-ER	lb/yr	0.0040	0.0040	0.0024	0.0035
Perfluorooctanoic acid (PFOA)	MDL-ER	lb/yr	0.0012	0.0011	0.0007	0.0010
Perfluorononanoic acid (PFNA)	MDL-ER	lb/yr	0.0013	0.0013	0.0008	0.0012
Perfluorodecanoic acid (PFDA)	MDL-ER	lb/yr	0.0004	0.0003	0.0002	0.0003
Perfluoroundecanoic acid (PFUnA)	MDL-ER	lb/yr	0.0004	0.0004	0.0003	0.0004
Perfluorododecanoic acid (PFDoA)	MDL-ER	lb/yr	0.0002	0.0002	0.0001	0.0002
Perfluorotridecanoic acid (PFTriA)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0002
Perfluorotetradecanoic acid (PFTeA)	MDL-ER	lb/yr	0.0004	0.0004	0.0002	0.0003
Perfluorobutanesulfonic acid (PFBS)	MDL-ER	lb/yr	0.0010	0.0009	0.0006	0.0008
Perfluorohexanesulfonic acid (PFHxS)	MDL-ER	lb/yr	0.0004	0.0004	0.0003	0.0004
Perfluoroheptanesulfonic acid (PFHpS)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0003
Perfluorooctanesulfonic acid (PFOS)	MDL-ER	lb/yr	0.0004	0.0003	0.0002	0.0003
Perfluorodecanesulfonic acid (PFDS)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0003
Perfluorooctanesulfonamide (FOSA)	MDL-ER	lb/yr	0.0004	0.0004	0.0002	0.0003
Perfluoropentanesulfonic acid (PFPeS)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0003
Perfluoronananesulfonic acid (PFNS)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0002
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MDL-ER	lb/yr	0.0002	0.0002	0.0001	0.0002
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0003
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	MDL-ER	lb/yr	0.0001	0.0001	0.0001	0.0001
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	MDL-ER	lb/yr	0.0139	0.0135	0.0084	0.0119
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0002
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	MDL-ER	lb/yr	0.0175	0.0170	0.0105	0.0150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0003
11-Chloroicosadecafluoro-3-oxaundecane-1-sulfonic acid	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0003
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	MDL-ER	lb/yr	0.0017	0.0017	0.0010	0.0014
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0003
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	MDL-ER	lb/yr	0.0006	0.0006	0.0004	0.0005
Perfluoro-n-octadecanoic acid (PFODA)	MDL-ER	lb/yr	0.0010	0.0010	0.0006	0.0009
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	MDL-ER	lb/yr	0.0305	0.0294	0.0184	0.0261
N-methylperfluorooctane sulfonamide (NMeFOSA)	MDL-ER	lb/yr	0.0012	0.0012	0.0007	0.0010
N-ethylperfluorooctane sulfonamide (NEtFOSA)	MDL-ER	lb/yr	0.0010	0.0010	0.0006	0.0009
Perfluoro-n-hexadecanoic acid (PFHxDA)	MDL-ER	lb/yr	0.0005	0.0005	0.0003	0.0004
Perfluorododecanesulfonic acid (PFDoS)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0003
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0002
10:2 Fluorotelomer carboxylic acid	MDL-ER	lb/yr	0.0009	0.0008	0.0005	0.0008
6:2 Fluorotelomer carboxylic acid	MDL-ER	lb/yr	0.0016	0.0016	0.0010	0.0014
7:3 Fluorotelomer carboxylic acid	MDL-ER	lb/yr	0.0009	0.0009	0.0006	0.0008
6:2 Fluorotelemer unsaturated acid	MDL-ER	lb/yr	0.0003	0.0003	0.0002	0.0003
8:2 Fluorotelomer carboxylic acid	MDL-ER	lb/yr	0.0007	0.0006	0.0004	0.0006
8:2 Fluorotelemer unsaturated acid	MDL-ER	lb/yr	0.0004	0.0003	0.0002	0.0003
5:3 Fluorotelomer carboxylic acid	MDL-ER	lb/yr	0.0012	0.0011	0.0007	0.0010
3-Perfluoropropylpropanoic acid	MDL-ER	lb/yr	0.0005	0.0005	0.0003	0.0005
Perfluoro-3-methoxypropanoic acid (PFMPA)	MDL-ER	lb/yr	0.0002	0.0002	0.0001	0.0002
Perfluoro-4-methoxybutanoic acid (PFMBA)	MDL-ER	lb/yr	0.0003	0.0002	0.0001	0.0002
Perfluoro-4-ethylcyclohexanesulfonic acid	MDL-ER	lb/yr	0.0003	0.0002	0.0002	0.0002
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	MDL-ER	lb/yr	0.0002	0.0002	0.0001	0.0002

PFAS Results at Reporting Limit (RL)
EPA OTM-45

Extruder Exhaust

Input Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Test Date	-	-	4/18/2023	4/18/2023	4/19/2023	--
Test Period	-	-	844 - 1148	1230 - 1534	813 - 1115	--
Run Time	theta	min	180	180	180	180
Meter Volume at Standard Conditions Vmstd	Vmstd-ft3	cubic feet	115.31	114.37	118.78	116.16
Dry Volumetric Air Flow Rate at Standard Conditions (M2, M4, ISO Calcs)	Qd	dscfm	1,462	1,465	1,521	1,483
Pollutant Total Sample Mass at RL (Sum Fractions 1,2,3), ng						
Perfluorobutanoic acid (PFBA)	RL	ng	1040.1	1020.3	622.6	894.3
Perfluoropentanoic acid (PFPeA)	RL	ng	120.4	110.5	70.8	100.6
Perfluorohexanoic acid (PFHxA)	RL	ng	120.4	110.5	70.8	100.6
Perfluoroheptanoic acid (PFHpA)	RL	ng	320.4	310.5	191.6	274.2
Perfluorooctanoic acid (PFOA)	RL	ng	120.4	110.5	70.8	100.6
Perfluorononanoic acid (PFNA)	RL	ng	120.4	110.5	70.8	100.6
Perfluorododecanoic acid (PFDoA)	RL	ng	120.4	110.5	70.8	100.6
Perfluorotridecanoic acid (PFTriA)	RL	ng	120.4	110.5	70.8	100.6
Perfluorotetradecanoic acid (PFTeA)	RL	ng	120.4	110.5	70.8	100.6
Perfluorobutanesulfonic acid (PFBS)	RL	ng	120.4	110.5	70.8	100.6
Perfluorohexanesulfonic acid (PFHxS)	RL	ng	120.4	110.5	70.8	100.6
Perfluoroheptanesulfonic acid (PFHpS)	RL	ng	120.4	110.5	70.8	100.6
Perfluorooctanesulfonic acid (PFOS)	RL	ng	120.4	110.5	70.8	100.6
Perfluorodecanesulfonic acid (PFDS)	RL	ng	120.4	110.5	70.8	100.6
Perfluorooctanesulfonamide (FOSA)	RL	ng	120.4	110.5	70.8	100.6
Perfluoropentanesulfonic acid (PFPeS)	RL	ng	120.4	110.5	70.8	100.6
Perfluorononanesulfonic acid (PFNS)	RL	ng	120.4	110.5	70.8	100.6
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	RL	ng	120.4	110.5	70.8	100.6
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	RL	ng	120.4	110.5	70.8	100.6
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	RL	ng	120.4	110.5	70.8	100.6
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	RL	ng	1099.4	1010.5	652.6	920.8
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	RL	ng	120.4	110.5	70.8	100.6
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	RL	ng	2099.4	2010.5	1250.6	1786.8
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	RL	ng	120.4	149.8	70.8	113.7
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	RL	ng	120.4	110.5	70.8	100.6
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	RL	ng	220.4	210.5	130.6	187.2
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	RL	ng	120.4	110.5	70.8	100.6
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	RL	ng	120.4	110.5	70.8	100.6
Perfluoro-n-octadecanoic acid (PFODA)	RL	ng	120.4	149.8	70.8	113.7
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	RL	ng	2099.4	2010.5	1250.6	1786.8
N-methylperfluorooctane sulfonamide (NMeFOSA)	RL	ng	120.4	110.5	70.8	100.6
N-ethylperfluorooctane sulfonamide (NEtFOSA)	RL	ng	120.4	110.5	70.8	100.6
Perfluoro-n-hexadecanoic acid (PFHxDA)	RL	ng	120.4	110.5	70.8	100.6
Perfluorododecanesulfonic acid (PFDoS)	RL	ng	120.4	110.5	70.8	100.6
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	RL	ng	120.4	110.5	70.8	100.6
10:2 Fluorotelomer carboxylic acid	RL	ng	120.4	110.5	70.8	100.6
6:2 Fluorotelomer carboxylic acid	RL	ng	120.4	110.5	70.8	100.6
7:3 Fluorotelomer carboxylic acid	RL	ng	120.4	110.5	70.8	100.6
6:2 Fluorotelemer unsaturated acid	RL	ng	120.4	110.5	70.8	100.6
8:2 Fluorotelomer carboxylic acid	RL	ng	120.4	110.5	70.8	100.6
8:2 Fluorotelemer unsaturated acid	RL	ng	120.4	149.8	70.8	113.7
5:3 Fluorotelomer carboxylic acid	RL	ng	120.4	110.5	70.8	100.6
3-Perfluoropropylpropanoic acid	RL	ng	120.4	110.5	70.8	100.6
Perfluoro-3-methoxypropanoic acid (PFMPA)	RL	ng	120.4	110.5	70.8	100.6
Perfluoro-4-methoxybutanoic acid (PFMBA)	RL	ng	120.4	110.5	70.8	100.6
Perfluoro-4-ethylcyclohexanesulfonic acid	RL	ng	120.4	110.5	70.8	100.6
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	RL	ng	120.4	110.5	70.8	100.6

PFAS Results at Reporting Limit (RL)
EPA OTM-45

Extruder Exhaust

Calculated Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Pollutant Concentration, lb/dscf =Total Train mass, ng x 2.2046e-12/Vstd-ft3						
Perfluorobutanoic acid (PFBA)	RL-Conc	lb/dscf	2.0E-11	2.0E-11	1.2E-11	1.7E-11
Perfluoropentanoic acid (PFPeA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorohexanoic acid (PFHxA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoroheptanoic acid (PFHpA)	RL-Conc	lb/dscf	6.1E-12	6.0E-12	3.6E-12	5.2E-12
Perfluorooctanoic acid (PFOA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorononanoic acid (PFNA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorodecanoic acid (PFDA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoroundecanoic acid (PFUnA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorododecanoic acid (PFDoA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorotridecanoic acid (PFTriA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorotetradecanoic acid (PFTeA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorobutanesulfonic acid (PFBS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorohexanesulfonic acid (PFHxS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoroheptanesulfonic acid (PFHpS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorooctanesulfonic acid (PFOS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorodecanesulfonic acid (PFDS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorooctanesulfonamide (FOSA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoropentanesulfonic acid (PFPeS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorononanesulfonic acid (PFNS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	RL-Conc	lb/dscf	2.1E-11	1.9E-11	1.2E-11	1.8E-11
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	RL-Conc	lb/dscf	4.0E-11	3.9E-11	2.3E-11	3.4E-11
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	RL-Conc	lb/dscf	2.3E-12	2.9E-12	1.3E-12	2.2E-12
11-Chloroicosasafluoro-3-oxaundecane-1-sulfonic acid	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	RL-Conc	lb/dscf	4.2E-12	4.1E-12	2.4E-12	3.6E-12
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoro-n-octadecanoic acid (PFODA)	RL-Conc	lb/dscf	2.3E-12	2.9E-12	1.3E-12	2.2E-12
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	RL-Conc	lb/dscf	4.0E-11	3.9E-11	2.3E-11	3.4E-11
N-methylperfluorooctane sulfonamide (NMeFOSA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
N-ethylperfluorooctane sulfonamide (NEtFOSA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoro-n-hexadecanoic acid (PFHxDA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluorododecanesulfonic acid (PFDoS)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
10:2 Fluorotelomer carboxylic acid	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
6:2 Fluorotelomer carboxylic acid	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
7:3 Fluorotelomer carboxylic acid	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
6:2 Fluorotelemer unsaturated acid	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
8:2 Fluorotelomer carboxylic acid	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
8:2 Fluorotelemer unsaturated acid	RL-Conc	lb/dscf	2.3E-12	2.9E-12	1.3E-12	2.2E-12
5:3 Fluorotelomer carboxylic acid	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
3-Perfluoropropylpropanoic acid	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoro-3-methoxypropanoic acid (PFMPA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoro-4-methoxybutanoic acid (PFMBA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoro-4-ethylcyclohexanesulfonic acid	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	RL-Conc	lb/dscf	2.3E-12	2.1E-12	1.3E-12	1.9E-12

PFAS Results at Reporting Limit (RL)
EPA OTM-45

Extruder Exhaust

Calculated Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Pollutant Emission Rate, lb/hr =Poll Mass, ng x 2.204 e-12 x 60 min x Qd-dscfm						
Perfluorobutanoic acid (PFBA)	RL-ER	lb/hr	1.74E-06	1.73E-06	1.05E-06	1.51E-06
Perfluoropentanoic acid (PFPeA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorohexanoic acid (PFHxA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoroheptanoic acid (PFHpA)	RL-ER	lb/hr	5.37E-07	5.26E-07	3.25E-07	4.63E-07
Perfluorooctanoic acid (PFOA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorononanoic acid (PFNA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorodecanoic acid (PFDA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoroundecanoic acid (PFUnA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorododecanoic acid (PFDoA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorotridecanoic acid (PFTriA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorotetradecanoic acid (PFTeA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorobutanesulfonic acid (PFBS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorohexanesulfonic acid (PFHxS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoroheptanesulfonic acid (PFHpS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorooctanesulfonic acid (PFOS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorodecanesulfonic acid (PFDS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorooctanesulfonamide (FOSA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoropentanesulfonic acid (PFPeS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorononanesulfonic acid (PFNS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	RL-ER	lb/hr	1.84E-06	1.71E-06	1.11E-06	1.55E-06
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	RL-ER	lb/hr	3.52E-06	3.41E-06	2.12E-06	3.02E-06
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	RL-ER	lb/hr	2.02E-07	2.54E-07	1.20E-07	1.92E-07
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	RL-ER	lb/hr	3.70E-07	3.57E-07	2.21E-07	3.16E-07
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoro-n-octadecanoic acid (PFODA)	RL-ER	lb/hr	2.02E-07	2.54E-07	1.20E-07	1.92E-07
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	RL-ER	lb/hr	3.52E-06	3.41E-06	2.12E-06	3.02E-06
N-methylperfluorooctane sulfonamide (NMeFOSA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
N-ethylperfluorooctane sulfonamide (NEtFOSA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoro-n-hexadecanoic acid (PFHxDA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluorododecanesulfonic acid (PFDoS)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
10:2 Fluorotelomer carboxylic acid	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
6:2 Fluorotelomer carboxylic acid	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
7:3 Fluorotelomer carboxylic acid	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
6:2 Fluorotelemer unsaturated acid	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
8:2 Fluorotelomer carboxylic acid	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
8:2 Fluorotelemer unsaturated acid	RL-ER	lb/hr	2.02E-07	2.54E-07	1.20E-07	1.92E-07
5:3 Fluorotelomer carboxylic acid	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
3-Perfluoropropylpropanoic acid	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoro-3-methoxypropanoic acid (PFMPA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoro-4-methoxybutanoic acid (PFMBA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoro-4-ethylcyclohexanesulfonic acid	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	RL-ER	lb/hr	2.02E-07	1.87E-07	1.20E-07	1.70E-07

PFAS Results at Reporting Limit (RL)
EPA OTM-45

Extruder Exhaust

Calculated Data	Symbol	Units	Run 1	Run 2	Run 3	Average
Pollutant Emission Rate, lb/yr						
=Pollutant ER lb/hr x 8760 hours/year						
Perfluorobutanoic acid (PFBA)	RL-ER	lb/yr	0.0153	0.0151	0.0092	0.0132
Perfluoropentanoic acid (PFPeA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorohexanoic acid (PFHxA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoroheptanoic acid (PFHpA)	RL-ER	lb/yr	0.0047	0.0046	0.0028	0.0041
Perfluorooctanoic acid (PFOA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorononanoic acid (PFNA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorodecanoic acid (PFDA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoroundecanoic acid (PFUnA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorododecanoic acid (PFDoA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorotridecanoic acid (PFTriA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorotetradecanoic acid (PFTeA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorobutanesulfonic acid (PFBS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorohexanesulfonic acid (PFHxS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoroheptanesulfonic acid (PFHpS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorooctanesulfonic acid (PFOS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorodecanesulfonic acid (PFDS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorooctanesulfonamide (FOSA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoropentanesulfonic acid (PFPeS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorononanesulfonic acid (PFNS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	RL-ER	lb/yr	0.0162	0.0150	0.0097	0.0136
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	RL-ER	lb/yr	0.0308	0.0298	0.0186	0.0264
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	RL-ER	lb/yr	0.0018	0.0022	0.0011	0.0017
11-Chloroicosadecafluoro-3-oxaundecane-1-sulfonic acid	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	RL-ER	lb/yr	0.0032	0.0031	0.0019	0.0028
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoro-n-octadecanoic acid (PFODA)	RL-ER	lb/yr	0.0018	0.0022	0.0011	0.0017
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	RL-ER	lb/yr	0.0308	0.0298	0.0186	0.0264
N-methylperfluorooctane sulfonamide (NMeFOSA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
N-ethylperfluorooctane sulfonamide (NEtFOSA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoro-n-hexadecanoic acid (PFHxDA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluorododecanesulfonic acid (PFDoS)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
10:2 Fluorotelomer carboxylic acid	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
6:2 Fluorotelomer carboxylic acid	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
7:3 Fluorotelomer carboxylic acid	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
6:2 Fluorotelemer unsaturated acid	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
8:2 Fluorotelomer carboxylic acid	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
8:2 Fluorotelemer unsaturated acid	RL-ER	lb/yr	0.0018	0.0022	0.0011	0.0017
5:3 Fluorotelomer carboxylic acid	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
3-Perfluoropropylpropanoic acid	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoro-3-methoxypropanoic acid (PFMPA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoro-4-methoxybutanoic acid (PFMBA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoro-4-ethylcyclohexanesulfonic acid	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	RL-ER	lb/yr	0.0018	0.0016	0.0011	0.0015

Appendix B

Field Data Sheets

EPA METHOD 2 FIELD DATA SHEET



EPA METHOD 3A -- Instrument Analysis Data Sheet

Project Zeus
Sample Location(s): Extruder Exhaust
Test No: 1
Date: 4-18-23
Operators: JMR

Analyzer Make / Model / Serial No. Quantek Q22
Analyzer O₂ Range (span), %: _____
Analyzer CO₂ Range (span), %: _____

	Cylinder Serial No.		
		O ₂ Cert. Conc.	CO ₂ Cert. Conc.
Zero Gas			
O ₂ /CO ₂ Mid-range			
O ₂ /CO ₂ High-range	<u>EB 00977 96</u>	<u>22.5</u>	<u>4.94</u>

STACK gas READ Ambient After Cal - 21.1% O₂ 0.0% CO₂

PRETEST ANALYZER CALIBRATION DATA

	O ₂		CO ₂	
	Cylinder Value, %	Analyzer Calibration Response, %	Cylinder Value, %	Analyzer Calibration Response, %
Zero Gas				
Mid-range:				
High-range:	<u>22.5</u>	<u>22.53</u>	<u>4.94</u>	<u>4.93</u>

Time of Calibration _____ to 0952

INTEGRATED BAG ANALYSIS

Location/Test No.

Run No.

Time Sampled

Time Analyzed

O₂, %

CO₂, %

1	2	3

POSTTEST ANALYZER CALIBRATION DATA

	O ₂		CO ₂	
	Cylinder Value, %	Analyzer Calibration Response, %	Cylinder Value, %	Analyzer Calibration Response, %
Zero Gas				
Mid-range:				
High-range:	<u>22.5</u>		<u>4.94</u>	



EPA OTM 45 - Field Data Sheet - Run 1

Project	Zues Company, Inc	Meter ID	C-17	Probe ID	2-1	Bar.Press.	29.75	in. Hg	Sample Train Leak	Rate, cfm:
Sample Location	Extruder Exhaust	Meter Y	0.9953	Pitot Tube No.	2-1	Stat Press.	-3.7	in. H2O	Pretest	0.000 at 15 in. Hg
Date	04/18/23	Orifice dH@	1.8368	Pitot Cp	0.84	CPM TC	M5 FO-9		Posttest	0.000 at 7.5 in. Hg
Test	1	Run #	1	Liner Type:	Glass	IMP Out TC	9122		Pretest Pitot leak Check Pos	PASS @ >3" w.c
Operators	TMR /RCW4					Barometer ID	M23-11		Posttest Pitot leak Check Neg	PASS @ >3" w.c

Sample Point	Sample Time DT	Actual Meter Vol Vm, ft3	Velocity Head DP, in. H2O	Orifice DH in. H2O	Ideal Point Volume Vm, ft3	Ideal Meter Vol Vm, ft3	Sample Train Vacuum in. Hg	Stack Temp Ts, °F	Sample Train Temperatures, °F					
									Probe	Filter Outlet	Primary XAD Trap	Breakthrough XAD Trap	Impinger Outlet	Meter Inlet
Start Time	844	63.30												
1	7.5	68.46	0.450	1.69	5.40	68.70	7.5	123	250	225	42	43	62	62
2	15.0	73.30	0.440	1.66	5.34	74.04	7.5	124	249	234	40	45	66	62
3	22.5	79.42	0.440	1.66	5.35	79.39	7.5	123	250	235	39	44	66	62
4	30.0	84.81	0.440	1.66	5.35	84.73	7.5	123	250	236	49	50	67	63
5	37.5	89.83	0.340	1.30	4.73	89.47	6.5	118	249	235	40	42	66	63
6	45.0	94.67	0.310	1.18	4.53	93.99	6.0	117	251	237	40	52	65	64
7	52.5	99.34	0.330	1.26	4.67	98.66	6.0	118	250	237	39	49	66	65
8	60.0	104.08	0.380	1.45	5.02	103.69	6.5	118	250	235	38	48	67	65
9	67.5	108.95	0.340	1.30	4.75	108.44	6.0	118	250	236	39	49	66	66
10	75.0	113.33	0.270	1.04	4.25	112.68	5.5	118	249	236	39	49	67	67
11	82.5	117.44	0.250	0.96	4.09	116.78	5.0	118	250	238	40	50	66	67
12	90.0	121.44	0.230	0.88	3.93	120.70	4.5	118	251	240	40	50	65	66
13	97.5	126.25	0.350	1.34	4.83	125.54	6.0	117	248	239	41	51	67	69
14	105.0	130.94	0.400	1.53	5.16	130.70	6.5	124	250	241	39	49	67	70
15	112.5	136.05	0.400	1.53	5.17	135.87	6.5	124	251	236	40	50	66	70
16	120.0	141.13	0.400	1.53	5.17	141.05	6.5	124	250	234	40	50	67	71
17	127.5	145.98	0.300	1.15	4.49	145.54	6.0	125	250	235	40	50	66	71
18	135.0	150.88	0.340	1.30	4.79	150.32	6.0	123	249	234	42	51	65	72
19	142.5	155.58	0.330	1.27	4.72	155.04	6.0	124	250	234	42	50	64	72
20	150.0	160.40	0.330	1.27	4.72	159.76	6.0	124	249	238	40	49	62	73
21	157.5	165.15	0.350	1.35	4.87	164.63	6.0	123	252	239	40	50	63	73
22	165.0	169.87	0.290	1.12	4.44	169.08	5.5	122	250	237	40	50	63	73
23	172.5	174.50	0.330	1.27	4.73	173.81	6.0	123	251	239	41	51	64	74
24	180.0	179.50	0.350	1.35	4.89	178.69	6.0	122	251	241	41	51	65	74
End Time	1148													
Run Time	180		Avg DH=	1.34			Avg Ts=	121.29					Avg Tm=	68.08

MOISTURE RECOVERY DATA :

XAD Primary TC ID	M23-14	Filter No.	Glass	Impinger	1	2	3	4	5	6	7	Desiccant	Total
XAD Breakthrough TC ID	BA-04	Nozzle No.	Glass	Final wt., g	267.6	506.6	798.4	732.5	738.9	295.4	372.1	832.5	
		Nozzle Dn.	0.250	Initial wt., g	268.0	505.6	794.1	733.8	737.4	296.0	369.1	815.1	
				Difference	-0.4	1.0	4.3	-1.3	1.5	-0.6	3.0	17.4	24.9



EPA OTM 45 - Field Data Sheet - Run 2

Project	Zues Company, Inc	Meter ID	C-17	Probe ID	2-1	Bar.Press.	29.75	in. Hg	Sample Train Leak	Rate, cfm:
Sample Location	Extruder Exhaust	Meter Y	0.9953	Pitot Tube No.	2-1	Stat Press.	-3.7	in. H2O	Pretest	0.000 at 15 in. Hg
Date	04/18/23	Orifice dH@	1.8368	Pitot Cp	0.84	CPM TC	M5 FO-6		Posttest	0.000 at 7.5 in. Hg
Test	1	Run #	2	Liner Type:	Glass	IMP Out TC	9122		Pretest Pitot leak Check Pos	PASS @ >3" w.c
Operators	TMR /RCW4					Barometer ID	M23-11		Posttest Pitot leak Check Neg	PASS @ >3" w.c

Sample Point	Sample Time DT	Actual Meter Vol Vm, ft3	Velocity Head DP, in. H2O	Orifice DH in. H2O	Ideal Point Volume Vm, ft3	Ideal Meter Vol Vm, ft3	Sample Train Vacuum in. Hg	Stack Temp Ts, °F	Sample Train Temperatures, °F					
									Probe	Filter Outlet	Primary XAD Trap	Breakthrough XAD Trap	Impinger Outlet	Meter Inlet
Start Time	1230	180.10												
1	7.5	185.45	0.450	1.74	5.53	185.63	7.0	123	250	223	46	56	63	74
2	15.0	190.80	0.440	1.70	5.47	191.11	7.0	123	250	228	44	54	63	75
3	22.5	196.21	0.450	1.74	5.54	196.65	7.0	123	249	225	44	54	65	75
4	30.0	201.85	0.460	1.78	5.61	202.26	7.5	123	249	228	43	53	66	75
5	37.5	207.05	0.340	1.32	4.83	207.09	6.5	122	251	232	44	54	59	76
6	45.0	212.09	0.360	1.40	4.98	212.06	6.5	122	252	233	53	53	59	76
7	52.5	216.91	0.300	1.16	4.55	216.61	6.0	122	250	235	43	53	58	76
8	60.0	221.70	0.330	1.28	4.77	221.37	6.0	122	252	236	43	53	57	76
9	67.5	226.40	0.320	1.24	4.69	226.07	5.5	122	251	236	45	55	57	76
10	75.0	230.77	0.270	1.05	4.31	230.38	5.0	122	250	237	44	55	58	76
11	82.5	235.00	0.250	0.97	4.15	234.53	5.0	122	250	238	43	53	58	76
12	90.0	238.98	0.230	0.89	3.98	238.52	4.5	122	249	239	44	54	59	76
13	97.5	243.75	0.330	1.28	4.77	243.29	5.5	120	249	238	46	55	63	76
14	105.0	248.72	0.410	1.58	5.30	248.59	6.5	125	250	244	44	54	56	76
15	112.5	253.86	0.410	1.58	5.30	253.88	6.5	125	251	244	46	55	56	76
16	120.0	259.20	0.420	1.62	5.35	259.24	7.0	126	250	240	48	56	58	76
17	127.5	264.22	0.360	1.39	4.96	264.20	6.5	125	251	240	44	55	57	77
18	135.0	269.53	0.370	1.43	5.04	269.24	6.5	126	250	240	46	56	57	77
19	142.5	274.45	0.360	1.39	4.97	274.21	6.5	125	250	241	46	56	57	77
20	150.0	279.50	0.340	1.31	4.83	279.04	6.0	126	249	239	48	57	59	77
21	157.5	284.17	0.300	1.16	4.54	283.58	5.5	126	250	239	49	58	60	77
22	165.0	288.59	0.290	1.12	4.46	288.04	5.0	126	249	240	50	59	61	77
23	172.5	293.00	0.310	1.20	4.61	292.66	5.0	126	250	243	51	60	62	77
24	180.0	297.10	0.320	1.24	4.69	297.34	5.0	126	251	244	52	61	63	77
End Time	1534													
Run Time	180		Avg DH=	1.36			Avg Ts=	123.75					Avg Tm=	76.13

MOISTURE RECOVERY DATA :

XAD Primary TC ID	M23-5	Filter No.	Glass	Impinger	1	2	3	4	5	6	7	Desiccant	Total
XAD Breakthrough TC ID	BA-04	Nozzle No.	Glass	Final wt., g	237.9	490.2	745.6	741.7	734.2	293.9	369.6	886.4	
		Nozzle Dn.	0.250	Initial wt., g	238.5	490.0	752.0	741.9	735.0	294.5	366.6	862.5	
				Difference	-0.6	0.2	-6.4	-0.2	-0.8	-0.6	3.0	23.9	18.5



EPA OTM 45 - Field Data Sheet - Run 3

Project	Zues Company, Inc	Meter ID	C-17	Probe ID	2-1	Bar.Press.	29.90	in. Hg	Sample Train Leak Rate, cfm:		
Sample Location	Extruder Exhaust	Meter Y	0.9953	Pitot Tube No.	2-1	Stat Press.	-3.7	in. H2O	Pretest	0.000	at 15 in. Hg
Date	04/19/23	Orifice dH@	1.8368	Pitot Cp	0.84	CPM TC	M5 FO-9		Posttest	0.000	at 7.5 in. Hg
Test	1	Run #	3	Liner Type:	Glass	IMP Out TC	9122		Pretest Pitot leak Check Pos	PASS	@ >3" w.c
Operators	TMR /RCW4								Posttest Pitot leak Check Neg	PASS	@ >3" w.c

Sample Point	Sample Time DT	Actual Meter Vol Vm, ft3	Velocity Head DP, in. H ₂ O	Orifice DH in. H ₂ O	Ideal Point Volume Vm, ft ³	Ideal Meter Vol Vm, ft3	Sample Train Vacuum in. Hg	Stack Temp Ts, °F	Sample Train Temperatures, °F					
									Probe	Filter Outlet	Primary XAD Trap	Breakthrough XAD Trap	Impinger Outlet	Meter Inlet
Start Time	813	297.40												
1	7.5	302.67	0.430	1.63	5.31	302.71	6.0	118	250	218	58	64	64	64
2	15.0	308.00	0.440	1.65	5.33	308.03	6.0	125	250	223	41	60	65	64
3	22.5	313.50	0.440	1.65	5.33	313.36	6.0	125	251	222	39	58	65	65
4	30.0	318.81	0.450	1.69	5.40	318.76	6.0	125	250	224	40	55	66	65
5	37.5	323.72	0.360	1.36	4.84	323.60	5.0	122	249	228	38	50	66	66
6	45.0	328.79	0.390	1.47	5.04	328.64	5.5	125	250	230	39	51	67	67
7	52.5	333.83	0.380	1.43	4.99	333.62	5.5	124	249	233	39	49	66	67
8	60.0	338.75	0.380	1.43	4.99	338.61	5.5	124	251	237	40	50	67	68
9	67.5	343.85	0.400	1.51	5.12	343.73	6.0	124	250	235	40	50	67	69
10	75.0	349.05	0.410	1.55	5.20	348.93	6.0	124	250	235	40	50	66	70
11	82.5	354.06	0.380	1.44	5.01	353.94	5.5	124	251	236	40	50	67	70
12	90.0	358.86	0.350	1.33	4.81	358.76	5.0	124	249	234	38	48	65	71
13	97.5	364.15	0.450	1.71	5.46	364.21	6.0	125	250	232	37	47	66	72
14	105.0	369.75	0.460	1.75	5.53	369.74	6.0	125	250	234	35	46	66	74
15	112.5	375.20	0.440	1.68	5.43	375.17	6.0	125	250	234	35	45	66	73
16	120.0	380.60	0.430	1.64	5.36	380.53	6.0	125	250	234	34	44	66	73
17	127.5	385.52	0.380	1.45	5.04	385.57	5.5	125	252	234	34	44	64	74
18	135.0	390.62	0.390	1.49	5.11	390.68	5.5	125	250	233	34	45	64	74
19	142.5	395.66	0.340	1.30	4.78	395.45	5.0	125	250	231	34	44	64	75
20	150.0	400.23	0.300	1.15	4.50	399.95	5.0	125	251	232	34	44	65	75
21	157.5	405.00	0.340	1.30	4.78	404.74	5.0	125	250	233	34	44	66	76
22	165.0	409.30	0.270	1.03	4.27	409.01	4.5	125	251	233	34	45	64	76
23	172.5	413.40	0.250	0.96	4.11	413.12	4.0	125	251	234	34	44	64	76
24	180.0	417.10	0.230	0.88	3.95	417.07	4.0	124	250	235	34	44	65	77
End Time	1115													
Run Time	180		Avg DH=	1.44			Avg Ts=	124.29				Avg Tm=	70.88	

XAD Primary TC ID M23-14
XAD Breakthrough TC ID BA-04

Filter No. Glass
Nozzle No. Glass
Nozzle Dn. 0.250
Impinger
Final wt., g
Initial wt., g
Difference

MOISTURE RECOVERY DATA :

1	2	3	4	5	6	7	Desiccant	Total
272.0	514.0	682.2	722.7	812.8	290.3	350.9	894.2	
263.0	513.0	735.2	741.6	744.8	291.3	350.8	870.6	
9.0	1.0	-53.0	-18.9	68.0	-1.0	0.1	23.6	28.8



OTM-45
IMPINGER RECOVERY

Project: Zeus company

Date: 4-18-23 / 4-19-23

Project No: 4038 1001.00

Operators: DC

Source: Extruder Exhaust Sample Location: Stack

TEST RUN 1	W-1042			W-1046				Dry Column
	XAD Primary	First Knockout	Imp 1	Imp 2	Imp 3	XAD Backup	Second Knockout	
	g	g	g	g	g	g	g	
End	267.6	506.6	798.4	732.5	738.9	295.4	372.1	832.5
Start	268.0	505.6	794.1	733.8	737.4	296.0	369.1	815.1
Change	(.4)					(.6)		
W-1042 MASS OF MOISTURE COLLECTED, g								

TEST RUN 2	W-1049			W-1053				Dry Column
	XAD Primary	First Knockout	Imp 1	Imp 2	Imp 3	XAD Backup	Second Knockout	
	g	g	g	g	g	g	g	
End	237.9	490.2	798.2	732.5	734.2	293.9	369.6	886.4
Start	238.5	490.0	752.0	741.9	735.0	294.5	366.6	862.5
Change	(.6)	.2				(.6)		
W-1049 MASS OF MOISTURE COLLECTED, g								

TEST RUN 3	W-1056			W-1060				Dry Column
	XAD Primary	First Knockout	Imp 1	Imp 2	Imp 3	XAD Backup	Second Knockout	
	g	g	g	g	g	g	g	
End	272.0	514.0	682.2	722.7	812.8	290.3	350.9	894.2
Start	263.0	513.0	735.2	741.6	744.8	291.3	350.8	870.6
Change								
W-1056 MASS OF MOISTURE COLLECTED, g								

TEST RUN								Dry Column
	XAD Primary	First Knockout	Imp 1	Imp 2	Imp 3	XAD Backup	Second Knockout	
	g	g	g	g	g	g	g	
End								
Start								
Change								
MASS OF MOISTURE COLLECTED, g								

NOTES and COMMENTS

4/17 1Kg Std = 999.7 DC

4/18 1Kg Std = 999.4 DC

4/19 1Kg Std = 999.2 DC

Recovered filters have slight pink color
#2 Condenser Rinse slight yellow color



OTM-45
IMPINGER RECOVERY

Project: Zeus Company

Date: 4-18-23

Project No: 40381001.00

Operators: DC

Source:

Sample Location: Stack

TEST <u>Proof</u> RUN <u>BLANK</u>	<u>W-1070</u>				<u>W-1074</u>			Dry Column
	XAD Primary	First Knockout	Imp 1	Imp 2	Imp 3	XAD Backup	Second Knockout	
	g	g	g	g	g	g	g	
End	<u>269.6</u>	<u>510.4</u>	<u>731.6</u>	<u>741.3</u>	<u>736.3</u>	<u>295.2</u>	<u>349.1</u>	<u>871.3</u>
Start	<u>269.6</u>	<u>510.4</u>	<u>731.6</u>	<u>741.3</u>	<u>736.3</u>	<u>295.2</u>	<u>349.1</u>	<u>871.2</u>
Change	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>.1</u>
MASS OF MOISTURE COLLECTED, g								

TEST <u>Field</u> RUN <u>BLANK</u>	XAD Primary	First Knockout	Imp 1	Imp 2	Imp 3	XAD Backup	Second Knockout	Dry Column
	g	g	g	g	g	g	g	g
	<u>269.4</u>	<u>508.2</u>	<u>797.9</u>	<u>736.4</u>	<u>741.3</u>	<u>289.6</u>	<u>372.4</u>	<u>832.7</u>
End	<u>269.4</u>	<u>508.2</u>	<u>797.9</u>	<u>736.4</u>	<u>741.3</u>	<u>289.6</u>	<u>372.4</u>	<u>832.5</u>
Start	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>.2</u>
Change	MASS OF MOISTURE COLLECTED, g							

TEST ____ RUN ____	XAD Primary	First Knockout	Imp 1	Imp 2	Imp 3	XAD Backup	Second Knockout	Dry Column
	g	g	g	g	g	g	g	g
End								
Start								
Change	MASS OF MOISTURE COLLECTED, g							

TEST ____ RUN ____	XAD Primary	First Knockout	Imp 1	Imp 2	Imp 3	XAD Backup	Second Knockout	Dry Column
	g	g	g	g	g	g	g	g
End								
Start								
Change	MASS OF MOISTURE COLLECTED, g							

NOTES and COMMENTS

Appendix C

Laboratory Reports and Sample Chain of Custody

OTM-45 Laboratory Results Summary
Reagent Blanks (FSMB)
Extruder Exhaust

Laboratory Sample ID	XAD Resin Trap				MEOH/5% NH4OH				Filter				DI Water			
	140-31434-21				140-31434-22				140-31434-23				140-31434-24			
Compound	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag	Reporting Limit	MDL
Perfluorobutanoic acid (PFBA)	0	CI	10.0	9.40	0	ND	10.0	9.40	0	ND	2.00	1.30	0	ND	0.500	0.200
Perfluoropentanoic acid (PFPeA)	0	ND	1.00	0.450	0	ND	1.00	0.450	0	ND	1.00	0.180	0	ND	0.500	0.0650
Perfluorohexanoic acid (PFHxA)	0	ND	1.00	0.520	0	ND	1.00	0.520	0	ND	1.00	0.210	0	ND	0.500	0.190
Perfluoroheptanoic acid (PFHpA)	0	ND	3.00	2.60	0	ND	3.00	2.60	0	ND	1.00	0.620	0	ND	0.500	0.153
Perfluorooctanoic acid (PFOA)	0.719	J	1.00	0.660	0	ND	1.00	0.660	0	ND	1.00	0.650	0	ND	0.500	0.0950
Perfluorononanoic acid (PFNA)	0	ND	1.00	0.890	0	ND	1.00	0.890	0	ND	1.00	0.0850	0	ND	0.500	0.0525
Perfluorodecanoic acid (PFDA)	0	ND	1.00	0.210	0	ND	1.00	0.210	0	ND	1.00	0.250	0	ND	0.500	0.0650
Perfluoroundecanoic acid (PFUnA)	0	ND	1.00	0.270	0	ND	1.00	0.270	0	ND	1.00	0.170	0	ND	0.500	0.0750
Perfluorododecanoic acid (PFDoA)	0	ND	1.00	0.120	0	ND	1.00	0.120	0	ND	1.00	0.100	0	ND	0.500	0.0525
Perfluorotridecanoic acid (PFTriA)	0	-	1.00	0.170	0	-	1.00	0.170	0	ND	1.00	0.140	0	ND	0.500	0.0800
Perfluorotetradecanoic acid (PFTeA)	0	ND	1.00	0.230	0	ND	1.00	0.230	0	ND	1.00	0.170	0	ND	0.500	0.113
Perfluorobutanesulfonic acid (PFBS)	0	ND	1.00	0.520	0	ND	1.00	0.520	0	ND	1.00	0.290	0	ND	0.500	0.0450
Perfluorohexanesulfonic acid (PFHxS)	0	ND	1.00	0.260	0	ND	1.00	0.260	0	ND	1.00	0.220	0	ND	0.500	0.0575
Perfluoroheptanesulfonic acid (PFHpS)	0	ND	1.00	0.200	0	ND	1.00	0.200	0	ND	1.00	0.890	0	ND	0.500	0.115
Perfluorooctanesulfonic acid (PFOS)	0	ND	1.00	0.150	0	ND	1.00	0.150	0	ND	1.00	0.120	0	ND	0.500	0.0650
Perfluorodecanesulfonic acid (PFDS)	0	-	1.00	0.200	0	-	1.00	0.200	0	ND	1.00	0.110	0	ND	0.500	0.0825
Perfluorooctanesulfonamide (FOSA)	0	ND	1.00	0.230	0	ND	1.00	0.230	0	ND	1.00	0.110	0	ND	0.500	0.200
Perfluoropentanesulfonic acid (PFPeS)	0	ND	1.00	0.210	0	ND	1.00	0.210	0	ND	1.00	0.450	0	ND	0.500	0.0600
Perfluorononanesulfonic acid (PFNS)	0	-	1.00	0.160	0	-	1.00	0.160	0	ND	1.00	0.120	0	ND	0.500	0.0375
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0	ND	1.00	0.120	0	ND	1.00	0.120	0	ND	1.00	0.110	0	ND	0.500	0.103
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0	ND	1.00	0.190	0	ND	1.00	0.190	0	ND	1.00	0.0950	0	ND	0.500	0.0750
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0	ND	1.00	0.0640	0	ND	1.00	0.0640	0	ND	1.00	0.220	0	ND	0.500	0.0575
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0	ND	10.00	8.70	0	ND	10.0	8.70	0	ND	1.00	0.0880	0	ND	0.500	0.138
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0	ND	1.00	0.160	0	ND	1.00	0.160	0	ND	1.00	0.160	0	ND	0.500	0.130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0	ND	20.00	11.0	0	ND	20.0	11.0	0	ND	1.00	0.150	0	ND	0.500	0.235
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0	-	1.00	0.180	0	-	1.00	0.180	0	ND	5.00	4.90	0	ND	0.500	0.0650
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0	-	1.00	0.180	0	-	1.00	0.180	0	ND	1.00	0.120	0	ND	0.500	0.0700
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0	+	2.00	1.10	0	+	2.00	1.10	0	ND	1.00	0.140	0	ND	0.500	0.140
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	0	ND	1.00	0.170	0	ND	1.00	0.170	0	ND	1.00	0.120	0	ND	0.500	0.108
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	0	ND	20.00	0.370	0	ND	1.00	0.370	0	ND	1.00	0.0910	0	ND	0.500	0.185
Perfluoro-n-octadecanoic acid (PFODA)	0	*, *1	1.00	0.640	0	*, *1	1.00	0.640	0	ND	5.00	4.00	0	ND	0.500	0.128
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	0	ND	1.0	19.8	0	ND	20.0	19.8	0	ND	1.00	0.140	0	ND	0.500	0.103
N-methylperfluorooctane sulfonamide (NMeFOSA)	0	ND	1.00	0.770	0	ND	1.00	0.770	0	ND	1.00	0.320	0	ND	0.500	0.0850
N-ethylperfluorooctane sulfonamide (NEtFOSA)	0	ND	1.00	0.660	0	ND	1.00	0.660	0	ND	1.00	0.290	0	ND	0.500	0.135
Perfluoro-n-hexadecanoic acid (PFHxDA)	0	ND	1.00	0.290	0	ND	1.00	0.290	0	ND	1.00	0.480	0	ND	0.500	0.143
Perfluorododecanesulfonic acid (PFDoS)	0	*, *1	1.00	0.180	0	*, *1	1.00	0.180	0	ND	1.00	0.350	0	ND	0.500	0.0800
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	ND	1.00	0.160	0	ND	1.00	0.160	0	ND	1.00	0.430	0	ND	0.500	0.145
10:2 Fluorotelomer carboxylic acid	0	ND	1.00	0.520	0	ND	1.00	0.520	0	ND	1.00	0.350	0	ND	0.500	0.300
6:2 Fluorotelomer carboxylic acid	0	ND	1.00	1.00	0	ND	1.00	1.00	0	ND	1.00	0.420	0	ND	0.500	0.300
7:3 Fluorotelomer carboxylic acid	0	ND	1.00	0.560	0	ND	1.00	0.560	0	ND	1.00	0.140	0	ND	0.500	0.375
6:2 Fluorotelemer unsaturated acid	0	ND	1.00	0.200	0	ND	1.00	0.200	0	ND	1.00	0.220	0	ND	0.500	0.0900
8:2 Fluorotelomer carboxylic acid	0	*1	1.00	0.380	0	*1	1.00	0.380	0	ND	1.00	0.140	0	ND	0.500	0.325
8:2 Fluorotelemer unsaturated acid	0	ND	1.00	0.200	0	ND	1.00	0.200	0	ND	5.00	4.70	0	ND	0.500	0.200
5:3 Fluorotelomer carboxylic acid	0	ND	1.00	0.700	0	ND	1.00	0.700	0	ND	1.00	0.0980	0	ND	0.500	0.300
3-Perfluoropropylpropanoic acid	0	ND	1.00	0.310	0	ND	1.00	0.310	0	ND	1.00	0.200	0	ND	0.500	0.220
Perfluoro-3-methoxypropanoic acid (PFMPA)	0	ND	1.00	0.120	0	ND	1.00	0.120	0	ND	1.00	0.150	0	ND	0.500	0.145
Perfluoro-4-methoxybutanoic acid (PFMBA)	0	ND	1.00	0.130	0	ND	1.00	0.130	0	ND	1.00	0.200	0	ND	0.500	0.198
Perfluoro-4-ethylcyclohexanesulfonic acid	0	-	1.00	0.140	0	-	1.00	0.140	0	ND	1.00	0.150	0	ND	0.500	0.160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	0	ND	1.00	0.100	0	ND	1.00	0.100	0	ND	1.00	0.140	0	ND	0.500	0.128

OTM-45 Laboratory Results Summary
Sample Train Proof Blank (STPB)
Extruder Exhaust

	Fraction 1, ng Filter and FH Rinse				Fraction 2, ng BH Rinse and Primary XAD				Fraction 3, ng Cond/Imp water and Rinse				Fraction 4, ng Back up XAD trap				Fractions 1-3 Total Mass, ng	
Laboratory Sample ID	140-31434-17				140-31434-18				140-31434-19				140-31434-20					
Compound	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag
Perfluorobutanoic acid (PFBA)	0	ND	2.00	1.30	0	ND	10.0	9.40	0	CI	0.500	0.200	0	CI	10.0	9.40	0	CI
Perfluoropentanoic acid (PFPeA)	0	ND	1.00	0.180	0.718	J	1.00	0.450	0	ND	0.500	0.0650	0	ND	1.00	0.450	0.718	J
Perfluorohexanoic acid (PFHxA)	0	ND	1.00	0.210	0	ND	1.00	0.520	0	ND	0.500	0.190	0	ND	1.00	0.520	0.00	ND
Perfluoroheptanoic acid (PFHpA)	0	ND	1.00	0.620	0	ND	3.00	2.60	0	ND	0.500	0.153	0	ND	3.00	2.60	0	ND
Perfluorooctanoic acid (PFOA)	0	ND	1.00	0.650	1.40		1.00	0.660	0	ND	0.500	0.0950	0.671	J	1.00	0.660	1.4	
Perfluorononanoic acid (PFNA)	0	ND	1.00	0.0850	0	ND	1.00	0.890	0	ND	0.500	0.0525	0	ND	1.00	0.890	0	ND
Perfluorodecanoic acid (PFDA)	0	ND	1.00	0.250	0	ND	1.00	0.210	0	ND	0.500	0.0650	0	ND	1.00	0.210	0	ND
Perfluoroundecanoic acid (PFUnA)	0	ND	1.00	0.170	0	ND	1.00	0.270	0	ND	0.500	0.0750	0	ND	1.00	0.270	0	ND
Perfluorododecanoic acid (PFDoA)	0	ND	1.00	0.100	0	ND	1.00	0.120	0	ND	0.500	0.0525	0	ND	1.00	0.120	0	ND
Perfluorotridecanoic acid (PFTriA)	0	ND	1.00	0.140	0	-	1.00	0.170	0	ND	0.500	0.0800	0	-	1.00	0.170	0	-
Perfluorotetradecanoic acid (PFTeA)	0	ND	1.00	0.170	0.00	ND, R	1.00	0.230	0	ND	0.500	0.113	0	ND	1.00	0.230	0	ND, R
Perfluorobutanesulfonic acid (PFBS)	0	ND	1.00	0.890	0	ND	1.00	0.520	0	ND	0.500	0.0450	0	ND	1.00	0.520	0	ND
Perfluorohexanesulfonic acid (PFHxS)	0	ND	1.00	0.110	0	ND	1.00	0.260	0	ND	0.500	0.0575	0	ND	1.00	0.260	0	ND
Perfluoroheptanesulfonic acid (PFHpS)	0	ND	1.00	0.110	0	ND	1.00	0.200	0	ND	0.500	0.115	0	ND	1.00	0.200	0	ND
Perfluorooctanesulfonic acid (PFOS)	0	ND	1.00	0.450	0	ND	1.00	0.150	0	ND	0.500	0.0650	0	ND	1.00	0.150	0	ND
Perfluorodecanesulfonic acid (PFDS)	0	ND	1.00	0.110	0	-	1.00	0.200	0	ND	0.500	0.0825	0	-	1.00	0.200	0	-
Perfluorooctanesulfonamide (FOSA)	0	ND	1.00	0.120	0	ND	1.00	0.230	0	ND	0.500	0.200	0	ND	1.00	0.230	0	ND
Perfluoropentanesulfonic acid (PFPeS)	0	ND	1.00	0.120	0	ND	1.00	0.210	0	ND	0.500	0.0600	0	ND	1.00	0.210	0	ND
Perfluorononanesulfonic acid (PFNS)	0	ND	1.00	0.120	0	-	1.00	0.160	0	ND	0.500	0.0375	0	-	1.00	0.160	0	-
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0	ND	1.00	0.120	0	ND, R	1.00	0.120	0	ND	0.500	0.103	0	ND	1.00	0.120	0	ND, R
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0	ND	1.00	0.140	0	ND, R	1.00	0.190	0	ND	0.500	0.0750	0	ND	1.00	0.190	0	ND, R
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0	ND	1.00	0.0910	0	ND	1.00	0.0640	0	ND	0.500	0.0575	0	ND	1.00	0.0640	0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0	ND	5.00	4.00	0	ND	10.0	8.70	0	ND	0.500	0.138	0	ND	10.0	8.70	0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0	ND	1.00	0.140	0	ND	1.00	0.160	0	ND	0.500	0.130	0	ND	1.00	0.160	0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0	ND	5.00	4.70	0	ND	20.0	11.0	0	ND	0.500	0.235	0	ND	20.0	11.0	0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0	ND	1.00	0.0980	0	-	1.00	0.180	0	ND	0.500	0.0650	0	-	1.00	0.180	0	-
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0	ND	1.00	0.200	0	-	1.00	0.180	0	ND	0.500	0.0700	0	-	1.00	0.180	0	-
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0	ND	1.00	0.140	0	+	2.00	1.10	0	ND	0.500	0.140	0	+	2.00	1.10	0	+
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	0	ND	1.00	0.32	0	ND	1.00	0.170	0	ND	0.500	0.108	0	ND	1.00	0.170	0	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	0	ND	1.00	0.120	0	ND, R	1.00	0.370	0	ND	0.500	0.185	0	ND	1.00	0.370	0	ND, R
Perfluoro-n-octadecanoic acid (PFODA)	0	ND	1.00	0.220	0	-, *	1.00	0.640	0	ND	0.500	0.128	0	-, *	1.00	0.640	0	-, *
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	0	ND	5.000	4.90	0	ND	20.0	19.8	0	ND	0.500	0.103	0	ND	20.0	19.8	0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	0	ND	1.00	0.150	0	ND, R	1.00	0.770	0	ND	0.500	0.0850	0	ND	1.00	0.770	0	ND, R
N-ethylperfluorooctane sulfonamide (NEtFOSA)	0	ND	1.00	0.160	0	ND, R	1.00	0.660	0	ND	0.500	0.135	0	ND	1.00	0.660	0	ND, R
Perfluoro-n-hexadecanoic acid (PFHxDA)	0	ND	1.00	0.2900	0	ND, R	1.00	0.290	0	ND	0.500	0.143	0	ND	1.00	0.290	0	ND, R
Perfluorododecanesulfonic acid (PFDoS)	0	ND	1.00	0.0950	0	-, *	1.00	0.180	0	ND	0.500	0.0800	0	-, *	1.00	0.180	0	-, *
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	ND	1.00	0.150	0	ND	1.00	0.160	0	ND	0.500	0.145	0	ND	1.00	0.160	0	ND
10:2 Fluorotelomer carboxylic acid	0	ND	1.00	0.420	1.29	I, R	1.00	0.520	0	ND	0.500	0.300	0	ND	1.00	0.520	1.29	I, R
6:2 Fluorotelomer carboxylic acid	0	ND	1.00	0.430	0	ND	1.00	1.00	0	ND	0.500	0.300	0	ND	1.00	1.00	0	ND
7:3 Fluorotelomer carboxylic acid	0	ND	1.00	0.350	0	ND	1.00	0.560	0	ND	0.500	0.375	0	ND	1.00	0.560	0	ND
6:2 Fluorotelemer unsaturated acid	0	ND	1.00	0.140	0	ND	1.00	0.200	0	ND	0.500	0.0900	0	ND	1.00	0.200	0	ND
8:2 Fluorotelomer carboxylic acid	0	ND	1.00	0.350	0	*1	1.00	0.380	0	ND	0.500	0.325	0	*1	1.00	0.380	0	*1
8:2 Fluorotelemer unsaturated acid	0	ND	1.00	0.220	0	ND	1.00	0.200	0	ND	0.500	0.200	0	ND	1.00	0.200	0	ND
5:3 Fluorotelomer carboxylic acid	0	ND	1.00	0.480	0	ND	1.00	0.700	0	ND	0.500	0.300	0	ND	1.00	0.700	0	ND
3-Perfluoropropylpropanoic acid	0	ND	1.00	0.290	0	ND	1.00	0.310	0	ND	0.500	0.220	0	ND	1.00	0.310	0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	0	ND	1.00	0.150	0	ND	1.00	0.120	0	ND	0.500	0.145	0	ND	1.00	0.120	0	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)	0	ND	1.00	0.200	0	ND	1.00	0.130	0	ND	0.500	0.198	0	ND	1.00	0.130	0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	0	ND	1.00	0.220	0	-	1.00	0.140	0	ND	0.500	0.160	0	-	1.00	0.140	0	-
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	0	ND	1.00	0.140	0	ND	1.00	0.100	0	ND	0.500	0.128	0	ND	1.00	0.100	0	ND

OTM-45 Laboratory Results Summary
Sample Train Field Blank (STFB)
Extruder Exhaust

	Fraction 1, ng Filter and FH Rinse				Fraction 2, ng BH Rinse and Primary XAD				Fraction 3, ng Cond/mp water & Rinse				Fraction 4, ng Back up XAD trap				STFB Total Mass Fractions 1-3, ng	
Laboratory Sample ID	140-31434-13				140-31434-14				140-31434-15				140-31434-16					
Compound	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag	Reporting Limit	MDL	Result, ng	Flag
Perfluorobutanoic acid (PFBA)	0	ND	2.00	1.30	0	ND	10.0	9.40	0	ND	0.500	0.200	0	CI	10.0	9.40	0	ND
Perfluoropentanoic acid (PFPeA)	0	ND	1.00	0.180	0.724	J	1.00	0.450	0	ND	0.500	0.0650	0	ND	1.00	0.450	0.72	J
Perfluorohexanoic acid (PFHxA)	0	ND	1.00	0.210	0	ND	1.00	0.520	0	ND	0.500	0.190	0	ND	1.00	0.520	0.000	ND
Perfluoroheptanoic acid (PFHpA)	0	ND	1.00	0.620	0	ND	3.00	2.60	0	ND	0.500	0.153	0	ND	3.00	2.60	0	ND
Perfluorooctanoic acid (PFOA)	0	ND	1.00	0.650	1.58		1.00	0.660	0	ND	0.500	0.0950	0	ND	1.00	0.660	2	
Perfluorononanoic acid (PFNA)	0	ND	1.00	0.0850	0	ND	1.00	0.890	0	ND	0.500	0.0525	0	ND	1.00	0.890	0	ND
Perfluorodecanoic acid (PFDA)	0	ND	1.00	0.250	0	ND	1.00	0.210	0	ND	0.500	0.0650	0	ND	1.00	0.210	0	ND
Perfluoroundecanoic acid (PFUnA)	0	ND	1.00	0.170	0	ND, R	1.00	0.270	0	ND	0.500	0.0750	0	ND	1.00	0.270	0	ND, R
Perfluorododecanoic acid (PFDoA)	0	ND	1.00	0.100	0	ND, R	1.00	0.120	0	ND	0.500	0.0525	0	ND	1.00	0.120	0.0	ND, R
Perfluorotridecanoic acid (PFTriA)	0	ND	1.00	0.140	0	*, R	1.00	0.170	0	ND	0.500	0.0800	0	*,	1.00	0.170	0	*, R
Perfluorotetradecanoic acid (PFTeA)	0	ND	1.00	0.170	0	ND, R	1.00	0.230	0	ND	0.500	0.113	0	ND	1.00	0.230	0	ND, R
Perfluorobutanesulfonic acid (PFBS)	0	ND	1.00	0.890	0	ND	1.00	0.520	0	ND	0.500	0.0450	0	ND	1.00	0.520	0	ND
Perfluorohexanesulfonic acid (PFHxS)	0	ND	1.00	0.110	0	ND	1.00	0.260	0	ND	0.500	0.0575	0	ND	1.00	0.260	0.0	ND
Perfluoroheptanesulfonic acid (PFHpS)	0	ND	1.00	0.110	0	ND	1.00	0.200	0	ND	0.500	0.115	0	ND	1.00	0.200	0	ND
Perfluorooctanesulfonic acid (PFOS)	0	ND	1.00	0.450	0.263	J	1.00	0.150	0	ND	0.500	0.0650	0	ND	1.00	0.150	0	J
Perfluorodecanesulfonic acid (PFDS)	0	ND	1.00	0.110	0	*,	1.00	0.200	0	ND	0.500	0.0825	0	*,	1.00	0.200	0	*,
Perfluorooctanesulfonamide (FOSA)	0	ND	1.00	0.0880	0	ND	1.00	0.230	0	ND	0.500	0.200	0	ND	1.00	0.230	0	ND
Perfluoropentanesulfonic acid (PFPeS)	0	ND	1.00	0.120	0	ND	1.00	0.210	0	ND	0.500	0.0600	0	ND	1.00	0.210	0	ND
Perfluorononanesulfonic acid (PFNS)	0	ND	1.00	0.120	0	*,	1.00	0.160	0	ND	0.500	0.0375	0	*,	1.00	0.160	0	*,
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0	ND	1.00	0.120	0	ND	1.00	0.120	0	ND	0.500	0.103	0	ND	1.00	0.120	0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0	ND	1.00	0.140	0	ND, R	1.00	0.190	0	ND	0.500	0.0750	0	ND	1.00	0.190	0.0	ND, R
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0	ND	1.00	0.0910	0	ND	1.00	0.0640	0	ND	0.500	0.0575	0	ND	1.00	0.0640	0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0	ND	5.00	4.00	0	ND	10.0	8.70	0	ND	0.500	0.138	0	ND	10.0	8.70	0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0	ND	1.00	0.140	0	ND	1.00	0.160	0	ND	0.500	0.130	0	ND	1.00	0.160	0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0	ND	5.00	4.70	0	ND	20.0	11.0	0	ND	0.500	0.235	0	ND	20.0	11.0	0.0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0	ND	1.00	0.0980	0	*,	1.00	0.180	0	ND	0.500	0.0650	0	*,	1.00	0.180	0	*,
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0	ND	1.00	0.200	0	*,	1.00	0.180	0	ND	0.500	0.0700	0	*,	1.00	0.180	0	*,
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	3.39		1.00	0.1400	170	*,	2.00	1.10	0	ND	0.500	0.140	0	*,	2.00	1.10	173	*,
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	0	ND	1.00	0.320	0	ND, R	1.00	0.170	0	ND	0.500	0.108	0	ND	1.00	0.170	0	ND, R
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	0	ND	1.00	0.120	0	ND, R	1.00	0.370	0	ND	0.500	0.185	0	ND	1.00	0.370	0	ND, R
Perfluoro-n-octadecanoic acid (PFODA)	0	ND	1.00	0.220	0	*, *1, R	1.00	0.640	0	ND	0.500	0.128	0	*, *1	1.00	0.640	0	*, *1, R
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	0	ND	5.00	4.90	0	ND, R	20.0	19.8	0	ND	0.500	0.103	0	ND	20.0	19.8	0	ND, R
N-methylperfluorooctane sulfonamide (NMeFOSA)	0	ND	1.00	0.150	0	ND, R	1.00	0.770	0	ND	0.500	0.0850	0	ND	1.00	0.770	0.00	ND, R
N-ethylperfluorooctane sulfonamide (NEtFOSA)	0	ND	1.00	0.160	0	ND, R	1.00	0.660	0	ND	0.500	0.135	0	ND	1.00	0.660	0	ND, R
Perfluoro-n-hexadecanoic acid (PFHxDA)	0	ND	1.00	0.2900	0	ND, R	1.00	0.290	0	ND	0.500	0.143	0	ND	1.00	0.290	0	ND, R
Perfluorododecanesulfonic acid (PFDoS)	0	ND	1.00	0.0950	0	*, *1	1.00	0.180	0	ND	0.500	0.0800	0	*, *1	1.00	0.180	0	*, *1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	ND	1.00	0.150	0	ND	1.00	0.160	0	ND	0.500	0.145	0	ND	1.00	0.160	0.00	ND
10:2 Fluorotelomer carboxylic acid	0	ND	1.00	0.420	0	ND, R	1.00	0.520	0	ND	0.500	0.300	0	ND	1.00	0.520	0.00	ND, R
6:2 Fluorotelomer carboxylic acid	0	ND	1.00	0.430	0	ND	1.00	1.00	0	ND	0.500	0.300	0	ND	1.00	1.00	0.00	ND
7:3 Fluorotelomer carboxylic acid	0	ND	1.00	0.350	0	ND	1.00	0.560	0	ND	0.500	0.375	0	ND	1.00	0.560	0.00	ND
6:2 Fluorotelomer unsaturated acid	0	ND	1.00	0.140	0	ND	1.00	0.200	0	ND	0.500	0.0900	0	ND	1.00	0.200	0.00	ND
8:2 Fluorotelomer carboxylic acid	0	ND	1.00	0.350	0	*1	1.00	0.380	0	ND	0.500	0.325	0	*1	1.00	0.380	0.00	*1
8:2 Fluorotelomer unsaturated acid	0	ND	1.00	0.220	0	ND	1.00	0.200	0	ND	0.500	0.200	0	ND	1.00	0.200	0.00	ND
5:3 Fluorotelomer carboxylic acid	0	ND	1.00	0.480	0	ND	1.00	0.700	0	ND	0.500	0.300	0	ND	1.00	0.700	0.00	ND
3-Perfluoropropylpropanoic acid	0	ND	1.00	0.290	0	ND	1.00	0.310	0	ND	0.500	0.220	0	ND	1.00	0.310	0.00	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.152	J	1.00	0.150	1.91		1.00	0.120	0	ND	0.500	0.145	0	ND	1.00	0.120	2.06	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	0	ND	1.00	0.200	0	ND	1.00	0.130	0	ND	0.500	0.198	0	ND	1.00	0.130	0.00	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	0	ND	1.00	0.220	0	*,	1.00	0.140	0	ND	0.500	0.160	0	*,	1.00	0.140	0.00	*,
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	0	ND	1.00	0.140	0	ND	1.00	0.100	0	ND	0.500	0.128	0	ND	1.00	0.100	0.00	ND

OTM-45 Laboratory Results Summary
Test Run 1
Extruder Exhaust

	Fraction 1, ng Filter and FH Rinse				Fraction 2, ng BH Rinse and Primary XAD				Fraction 3, ng Cond/Imp water & Rinse				Fraction 4, ng Breakthrough XAD				Total Train Mass, ng	Frac 4 Break- through	Flag "A" if over 30% Break Through	Total Mass, ng (Add Frac 4 if Applicable)	
Laboratory Sample ID	140-31434-1				140-31434-2				140-31434-3				140-31434-4								
	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	%	Qualifier	Total Mass, ng	Qualifier
Compound																					
Perfluorobutanoic acid (PFBA)	0	ND	39.5	25.7	0	ND	1000	940	0	ND	0.600	0.240	11.9		10.0	9.40	0			0	ND
Perfluoropentanoic acid (PFPeA)	0	ND	19.8	3.56	104		100	45.0	0	ND	0.600	0.0780	3.65		1.00	0.450	104	3.5		104	
Perfluorohexanoic acid (PFHxA)	0	ND	19.8	4.15	0	ND	100	52.0	0	ND	0.600	0.228	0	ND	1.00	0.520	0			0	ND
Perfluoroheptanoic acid (PFHpA)	0	ND	19.8	12.2	0	ND	300	260	0	ND	0.600	0.183	0	ND	3.00	2.60	0			0	ND
Perfluorooctanoic acid (PFOA)	0	ND	19.8	12.8	0	ND	100	66.0	0	ND	0.600	0.114	1.63		1.00	0.660	0			0	ND, x, y
Perfluorononanoic acid (PFNA)	4.76	J	19.8	1.68	0	ND	100	89.0	0	ND	0.600	0.0630	0	ND	1.00	0.890	4.76	0.0		4.76	J
Perfluorodecanoic acid (PFDA)	0	ND	19.8	4.94	0	ND	100	21.0	0	ND	0.600	0.0780	0	ND	1.00	0.210	0			0	ND
Perfluoroundecanoic acid (PFUnA)	6.80	J	19.8	3.36	0	ND	100	27.0	0	ND	0.600	0.0900	0	ND	1.00	0.270	6.8	0.0		6.8	J
Perfluorododecanoic acid (PFDoA)	0	ND	19.8	1.98	0	ND	100	12.0	0	ND	0.600	0.0630	0	ND	1.00	0.120	0			0	ND
Perfluorotridecanoic acid (PFTriA)	9.79	J	19.8	2.77	0	-	100	17.0	0	ND	0.600	0.0960	0	-	1.00	0.170	9.79	0.0		9.79	-
Perfluorotetradecanoic acid (PFTeA)	3.93	J	19.8	3.36	0	ND	100	23.0	0	ND	0.600	0.135	0	ND	1.00	0.230	3.93	0.0		3.93	J
Perfluorobutanesulfonic acid (PFBS)	0	ND	19.8	17.6	0	ND	100	52.0	0	ND	0.600	0.0540	0	ND	1.00	0.520	0			0	ND
Perfluorohexanesulfonic acid (PFHxS)	0	ND	19.8	2.17	0	ND	100	26.0	0	ND	0.600	0.0690	0	ND	1.00	0.260	0			0	ND
Perfluoroheptanesulfonic acid (PFHpS)	0	ND	19.8	2.17	0	ND	100	20.0	0	ND	0.600	0.138	0	ND	1.00	0.200	0			0	ND
Perfluorooctanesulfonic acid (PFOS)	0	ND	19.8	8.89	0	ND	100	15.0	0.715	I, Cl	0.600	0.0780	0	ND	1.00	0.150	0.715	0.0		0.715	I, Cl
Perfluorodecanesulfonic acid (PFDS)	0	ND	19.8	2.17	0	-	100	20.0	0	ND	0.600	0.0990	0	-	1.00	0.200	0			0	ND, -
Perfluorooctanesulfonamide (FOSA)	0	ND	19.8	1.74	0	ND	100	23.0	0	ND	0.600	0.240	0	ND	1.00	0.230	0			0	ND
Perfluoropentanesulfonic acid (PFPeS)	0	ND	19.8	2.37	0	ND	100	21.0	0	ND	0.600	0.0720	0	ND	1.00	0.210	0			0	ND
Perfluorononanesulfonic acid (PFNS)	0	ND	19.8	2.37	0	-	100	16.0	0	ND	0.600	0.0450	0	-	1.00	0.160	0			0	ND, -
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0	ND	19.8	2.37	0	ND	100	12.0	0	ND	0.600	0.123	0	ND	1.00	0.120	0			0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0	ND	19.8	2.77	0	ND	100	19.0	0	ND	0.600	0.0900	0	ND	1.00	0.190	0			0	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0	ND	19.8	1.80	0	ND	100	6.40	0	ND	0.600	0.0690	0	ND	1.00	0.0640	0			0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0	ND	98.8	79.0	0	ND	1000	870	0	ND	0.600	0.165	0	ND	10.0	8.70	0			0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0	ND	19.8	2.77	0	ND	100	16.0	0	ND	0.600	0.156	0	ND	1.00	0.160	0			0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0	ND	98.8	92.8	0	ND	2000	1100	0	ND	0.600	0.282	0	ND	20.0	11.0	0			0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0	ND	19.8	1.94	0	-	100	18.0	0	ND	0.600	0.0780	0	-	1.00	0.180	0			0	ND, -
11-Chloroicosadfluoro-3-oxaundecane-1-sulfonic acid	0	ND	19.8	3.95	0	-	100	18.0	0	ND	0.600	0.0840	0	-	1.00	0.180	0			0	ND, -
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1070		19.8	2.77	1950	+	200	110	0	ND	0.600	0.168	0	+	2.00	1.10	3020	0.0		3020	+
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	0	ND	19.8	6.32	0	ND	100	17.0	0	ND	0.600	0.129	0	ND	1.00	0.170	0			0	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	0	ND	19.8	2.37	0	ND	100	37.0	0	ND	0.600	0.222	0	ND	1.00	0.370	0			0	ND
Perfluoro-n-octadecanoic acid (PFODA)	0	ND	19.8	4.35	0	-, *	100	64.0	0	ND	0.600	0.153	0	-, *	1.00	0.640	0			0	ND, -, *
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	0	ND	98.8	96.8	0	ND	2000	1980	0	ND	0.600	0.123	0	ND	20.0	19.8	0			0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	0	ND	19.8	2.96	0	ND	100	77.0	0	ND	0.600	0.102	0	ND	1.00	0.770	0			0	ND
N-ethylperfluorooctane sulfonamide (NEtFOSA)	0	ND	19.8	3.16	0	ND	100	66.0	0	ND	0.600	0.162	0	ND	1.00	0.660	0			0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	0	ND	19.8	5.73	0	ND	100	29.0	0	ND	0.600	0.171	0	ND	1.00	0.290	0			0	ND
Perfluorododecanesulfonic acid (PFDoS)	0	ND	19.8	1.88	0	-, *	100	18.0	0	ND	0.600	0.0960	0	-, *	1.00	0.180	0			0	ND, -, *
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	ND	19.8	2.96	0	ND	100	16.0	0	ND	0.600	0.174	0	ND	1.00	0.160	0			0	ND
10:2 Fluorotelomer carboxylic acid	0	ND	19.8	8.30	0	ND	100	52.0	0	ND	0.600	0.360	0	ND	1.00	0.520	0			0	ND
6:2 Fluorotelomer carboxylic acid	0	ND	19.8	8.49	0	ND	100	100	0	ND	0.600	0.360	0	ND	1.00	1.00	0			0	ND
7:3 Fluorotelomer carboxylic acid	0	ND	19.8	6.91	0	ND	100	56.0	0	ND	0.600	0.450	0	ND	1.00	0.560	0			0	ND
6:2 Fluorotelemer unsaturated acid	0	ND	19.8	2.77	0	ND	100	20.0	0	ND	0.600	0.108	0	ND	1.00	0.200	0			0	ND
8:2 Fluorotelomer carboxylic acid	0	ND	19.8	6.91	0	*1	100	38.0	0	ND	0.600	0.390	0	*1	1.00	0.380	0			0	ND, *1
8:2 Fluorotelemer unsaturated acid	0	ND	19.8	4.35	0	ND	100	20.0	0	ND	0.600	0.240	0	ND	1.00	0.200	0			0	ND
5:3 Fluorotelomer carboxylic acid	0	ND	19.8	9.48	0	ND	100	70.0	0	ND	0.600	0.360	0	ND	1.00	0.700	0			0	ND
3-Perfluoropropylpropanoic acid	0	ND	19.8	5.73	0	ND	100	31.0	0	ND	0.600	0.264	0	ND	1.00	0.310	0			0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	13.2	J	19.8	2.96	2800		100	12.0	0	ND	0.600	0.174	3.67		1.00	0.120	2813.2	0.1		2813.2	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	0	ND	19.8	3.95	0	ND	100	13.0	0	ND	0.600	0.237	0	ND	1.00	0.130	0			0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	0	ND	19.8	4.35	0	-	100	14.0	0	ND	0.600	0.192	0	-	1.00	0.140	0			0	ND, -
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	0	ND	19.8	2.77	0	ND	100	10.0	0	ND	0.600	0.153	0	ND	1.00	0.100	0			0	ND

OTM-45 Laboratory Results Summary
Test Run 2
Extruder Exhaust

	Fraction 1, ng Filter and FH Rinse				Fraction 2, ng BH Rinse and Primary XAD				Fraction 3, ng Cond/lmp water & Rinse				Fraction 4, ng Breakthrough XAD				Total Train Mass, ng	Frac 4 Break- through	Flag "A" if over 30% Break Through	Total Mass, ng (Add Frac 4 if Applicable)	
Laboratory Sample ID	140-31434-5				140-31434-6				140-31434-7				140-31434-8								
Compound	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	%	Qualifier	Total Mass, ng	Qualifier
Perfluorobutanoic acid (PFBA)	0	ND	19.7	12.8	0	ND	1000	940	0	ND	0.620	0.248	0	ND	10.0	9.40	0			0	ND
Perfluoropentanoic acid (PFPeA)	0	ND	9.85	1.77	0	ND	100	45.0	0	ND	0.620	0.0806	2.85		1.00	0.450	0			0	ND
Perfluorohexanoic acid (PFHxA)	0	ND	9.85	2.07	0	ND	100	52.0	0	ND	0.620	0.236	0.615	J	1.00	0.520	0			0	ND
Perfluoroheptanoic acid (PFHpA)	0	ND	9.85	6.11	0	ND	300	260	0	ND	0.620	0.189	0	ND	3.00	2.60	0			0	ND
Perfluorooctanoic acid (PFOA)	0	ND	9.85	6.40	0	ND	100	66.0	0	ND	0.620	0.118	1.21		1.00	0.660	0			0	ND, x, y
Perfluorononanoic acid (PFNA)	0	ND	9.85	0.837	0	ND	100	89.0	0	ND	0.620	0.0651	0	ND	1.00	0.890	0			0	ND
Perfluorodecanoic acid (PFDA)	0	ND	9.85	2.46	0	ND	100	21.0	0	ND	0.620	0.0806	0	ND	1.00	0.210	0			0	ND
Perfluoroundecanoic acid (PFUnA)	0	ND	9.85	1.67	0	ND	100	27.0	0	ND	0.620	0.0930	0	ND	1.00	0.270	0			0	ND
Perfluorododecanoic acid (PFDoA)	1.21	J	9.85	0.985	0	ND	100	12.0	0	ND	0.620	0.0651	0	ND	1.00	0.120	1.21	0.0		1.21	J
Perfluorotridecanoic acid (PFTriA)	3.48	J	9.85	1.38	0	-	100	17.0	0	ND	0.620	0.0992	0	-	1.00	0.170	3.48	0.0		3.48	J, -
Perfluorotetradecanoic acid (PFTeA)	2.60	J	9.85	1.67	0	ND	100	23.0	0	ND	0.620	0.140	0	ND	1.00	0.230	2.6	0.0		2.6	J
Perfluorobutanesulfonic acid (PFBS)	0	ND	9.85	8.77	0	ND	100	52.0	0	ND	0.620	0.0558	0	ND	1.00	0.520	0			0	ND
Perfluorohexanesulfonic acid (PFHxS)	0	ND	9.85	1.08	0	ND	100	26.0	0	ND	0.620	0.0713	0	ND	1.00	0.260	0			0	ND
Perfluoroheptanesulfonic acid (PFHpS)	0	ND	9.85	1.08	0	ND	100	20.0	0	ND	0.620	0.143	0	ND	1.00	0.200	0			0	ND
Perfluorooctanesulfonic acid (PFOS)	0	ND	9.85	4.43	0	ND	100	15.0	0	ND	0.620	0.0806	0	ND	1.00	0.150	0			0	ND
Perfluorodecanesulfonic acid (PFDS)	0	ND	9.85	1.08	0	-	100	20.0	0	ND	0.620	0.102	0	-	1.00	0.200	0			0	ND, -
Perfluorooctanesulfonamide (FOSA)	0	ND	9.85	0.867	0	ND	100	23.0	0	ND	0.620	0.248	0	ND	1.00	0.230	0			0	ND
Perfluoropentanesulfonic acid (PFPeS)	0	ND	9.85	1.18	0	ND	100	21.0	0	ND	0.620	0.0744	0	ND	1.00	0.210	0			0	ND
Perfluorononanesulfonic acid (PFNS)	0	ND	9.85	1.18	0	-	100	16.0	0	ND	0.620	0.0465	0	-	1.00	0.160	0			0	ND, -
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0	ND	9.85	1.18	0	ND	100	12.0	0	ND	0.620	0.127	0	ND	1.00	0.120	0			0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0	ND	9.85	1.38	0	ND	100	19.0	0	ND	0.620	0.0930	0	ND	1.00	0.190	0			0	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0	ND	9.85	0.896	0	ND	100	6.40	0	ND	0.620	0.0713	0	ND	1.00	0.0640	0			0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0	ND	9.85	39.4	0	ND	1000	870	0	ND	0.620	0.171	0	ND	10.0	8.70	0			0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0	ND	9.85	1.38	0	ND	100	16.0	0	ND	0.620	0.161	0	ND	1.00	0.160	0			0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0	ND	9.85	46.3	0	ND	2000	1100	0	ND	0.620	0.291	0	ND	20.0	11.0	0			0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0	ND	49.2	0.965	0	-	100	18.0	0	ND	0.620	0.0806	0	-	1.00	0.180	0			0	ND, -
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0	ND	9.85	1.97	0	-	100	18.0	0	ND	0.620	0.0868	0	-	1.00	0.180	0			0	ND, -
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	693		9.85	1.38	8280	+	200	110	0	ND	0.620	0.174	1.17	J, +	2.00	1.10	8973	0.0		8973	J, +
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	0	ND	9.85	3.15	0	ND	100	17.0	0	ND	0.620	0.133	0	ND	1.00	0.170	0			0	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	0	ND	9.85	1.38	0	ND	100	37.0	0	ND	0.620	0.229	0	ND R	1.00	0.370	0			0	ND
Perfluoro-n-octadecanoic acid (PFODA)	0	ND	49.2	2.17	0	-, +1	100	64.0	0	ND	0.620	0.158	0	-, +1, R	1.00	0.640	0			0	ND, -, +1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	0	ND	9.85	1.18	0	ND	2000	1980	0	ND	0.620	0.127	0	ND	20.0	19.8	0			0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	0	ND	9.85	1.48	0	ND	100	77.0	0	ND	0.620	0.105	0	ND	1.00	0.770	0			0	ND
N-ethylperfluorooctane sulfonamide (NEtFOSA)	0	ND	9.85	1.58	0	ND	100	66.0	0	ND	0.620	0.167	0	ND	1.00	0.660	0			0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	0	ND	9.85	2.86	0	ND	100	29.0	0	ND	0.620	0.177	0	ND R	1.00	0.290	0			0	ND
Perfluorododecanesulfonic acid (PFDoS)	0	ND	9.85	0.936	0	-, +1	100	18.0	0	ND	0.620	0.0992	0	-, +1	1.00	0.180	0			0	ND, -, +1
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	0	ND	9.85	1.48	0	ND	100	16.0	0	ND	0.620	0.180	0	ND	1.00	0.160	0			0	ND
10:2 Fluorotelomer carboxylic acid	0	ND	9.85	4.14	0	ND	100	52.0	0	ND	0.620	0.372	0	ND	1.00	0.520	0			0	ND
6:2 Fluorotelomer carboxylic acid	0	ND	9.85	4.23	0	ND	100	100	0	ND	0.620	0.372	0	ND	1.00	1.00	0			0	ND
7:3 Fluorotelomer carboxylic acid	0	ND	9.85	3.45	0	ND	100	56.0	0	ND	0.620	0.465	0	ND	1.00	0.560	0			0	ND
6:2 Fluorotelemer unsaturated acid	0	ND	9.85	1.38	0	ND	100	20.0	0	ND	0.620	0.112	0	ND	1.00	0.200	0			0	ND
8:2 Fluorotelomer carboxylic acid	0	ND	9.85	3.45	0	+1	100	38.0	0	ND	0.620	0.403	0	+1	1.00	0.380	0			0	ND, +1
8:2 Fluorotelemer unsaturated acid	0	ND	49.2	2.17	0	ND	100	20.0	0	ND	0.620	0.248	0	ND	1.00	0.200	0			0	ND
5:3 Fluorotelomer carboxylic acid	0	ND	9.85	4.73	0	ND	100	70.0	0	ND	0.620	0.372	0	ND	1.00	0.700	0			0	ND
3-Perfluoropropylpropanoic acid	0	ND	9.85	2.86	0	ND	100	31.0	0	ND	0.620	0.273	0	ND	1.00	0.310	0			0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	10.0		9.85	1.48	3280		100	12.0	0	ND	0.620	0.180	4.20		1.00	0.120	3290	0.1		3290	
Perfluoro-4-methoxybutanoic acid (PFMBA)	0	ND	9.85	1.97	0	ND	100	13.0	0	ND	0.620	0.245	0	ND	1.00	0.130	0			0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	0	ND	9.85	2.17	0	-	100	14.0	0	ND	0.620	0.198	0	-	1.00	0.140	0			0	ND, -
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	0	ND	9.85	1.38	0	ND	100	10.0	0	ND	0.620	0.158	0	ND	1.00	0.100	0			0	ND

OTM-45 Laboratory Results Summary
Test Run 3
Extruder Exhaust

	Fraction 1, ng Filter and FH Rinse				Fraction 2, ng BH Rinse and Primary XAD				Fraction 3, ng Cond/Imp water & Rinse				Fraction 4, ng Breakthrough XAD				Fraction 1 3 Train Mass, ng	Frac 4 Break- through	Flag "A" if over 30% Break Through	Total Mass, ng (Add Frac 4 if Applicable)	
Laboratory Sample ID	140-31434-9				140-31434-10				140-31434-11				140-31434-12								
Compound	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	Qualifier	Reporting Limit	MDL	Result, ng	%	Qualifier	Total Mass, ng	Qualifier
Perfluorobutanoic acid (PFBA)	0	ND	20.0	13.0	0	ND	602	566	0	ND	0.610	0.244	0	CI	10.0	9.40	0			0	ND
Perfluoropentanoic acid (PFPeA)	6.78	J	10.0	1.80	32.5	J	60.2	27.1	0	ND	0.610	0.0793	1.38		1.00	0.450	39.28	3.5		39.28	J
Perfluorohexanoic acid (PFHxA)	0	ND	10.0	2.10	0	ND	60.2	31.3	0	ND	0.610	0.232	0	ND	1.00	0.520	0			0	ND
Perfluoroheptanoic acid (PFHpA)	0	ND	10.0	6.20	0	ND	181	157	0	ND	0.610	0.186	0	ND	3.00	2.60	0			0	ND
Perfluorooctanoic acid (PFOA)	0	ND	10.0	6.50	0	ND	60.2	39.8	0	ND	0.610	0.116	0	ND	1.00	0.660	0			0	ND, x
Perfluorononanoic acid (PFNA)	1.46	J	10.0	0.850	0	ND	60.2	53.6	0	ND	0.610	0.0641	0	ND	1.00	0.890	1.46	0.0		1.46	J
Perfluorodecanoic acid (PFDA)	0	ND	10.0	2.50	0	ND	60.2	12.7	0	ND	0.610	0.0793	0	ND	1.00	0.210	0			0	ND
Perfluoroundecanoic acid (PFUnA)	0	ND	10.0	1.70	0	ND	60.2	16.3	0	ND	0.610	0.0915	0	ND	1.00	0.270	0			0	ND
Perfluorododecanoic acid (PFDoA)	0	ND	10.0	1.00	0	ND	60.2	7.23	0	ND	0.610	0.0641	0	ND	1.00	0.120	0			0	ND
Perfluorotridecanoic acid (PFTriA)	2.52	J	10.0	1.40	0	-	60.2	10.2	0	ND	0.610	0.0976	0	-	1.00	0.170	2.52	0.0		2.52	J, -
Perfluorotetradecanoic acid (PFTeA)	0	ND	10.0	1.70	0	ND	60.2	13.9	0	ND	0.610	0.137	0	ND	1.00	0.230	0			0	ND
Perfluorobutanesulfonic acid (PFBS)	0	ND	10.0	8.90	0	ND	60.2	31.3	0	ND	0.610	0.0549	0	ND	1.00	0.520	0			0	ND
Perfluorohexanesulfonic acid (PFHxS)	0	ND	10.0	1.10	0	ND	60.2	15.7	0	ND	0.610	0.0702	0	ND	1.00	0.260	0			0	ND
Perfluoroheptanesulfonic acid (PFHpS)	0	ND	10.0	1.10	0	ND	60.2	12.0	0	ND	0.610	0.140	0	ND	1.00	0.200	0			0	ND
Perfluorooctanesulfonic acid (PFOS)	0	ND	10.0	4.50	0	ND	60.2	9.04	0	ND	0.610	0.0793	0	ND	1.00	0.150	0			0	ND
Perfluorodecanesulfonic acid (PFDS)	0	ND	10.0	1.10	0	-	60.2	12.0	0	ND	0.610	0.101	0	-	1.00	0.200	0			0	ND, -
Perfluorooctanesulfonamide (FOSA)	0	ND	10.0	0.880	0	ND	60.2	13.9	0	ND	0.610	0.244	0	ND	1.00	0.230	0			0	ND
Perfluoropentanesulfonic acid (PFPeS)	0	ND	10.0	1.20	0	ND	60.2	12.7	0	ND	0.610	0.0732	0	ND	1.00	0.210	0			0	ND
Perfluorononanesulfonic acid (PFNS)	0	ND	10.0	1.20	0	-	60.2	9.64	0	ND	0.610	0.0458	0	-	1.00	0.160	0			0	ND, -
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0	ND	10.0	1.20	0	ND	60.2	7.23	0	ND	0.610	0.125	0	ND	1.00	0.120	0			0	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0	ND	10.0	1.40	0	ND	60.2	11.4	0	ND	0.610	0.0915	0	ND	1.00	0.190	0			0	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0	ND	10.0	0.910	0	ND	60.2	3.86	0	ND	0.610	0.0702	0	ND	1.00	0.0640	0			0	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0	ND	50.0	40.0	0	ND	602	524	0	ND	0.610	0.168	0	ND	10.0	8.70	0			0	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0	ND	10.0	1.40	0	ND	60.2	9.64	0	ND	0.610	0.159	0	ND	1.00	0.160	0			0	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0	ND	50.0	47.0	0	ND	1200	663	0	ND	0.610	0.287	0	ND	20.0	11.0	0			0	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0	ND	10.0	0.980	0	-	60.2	10.8	0	ND	0.610	0.0793	0	-	1.00	0.180	0			0	ND, -
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0	ND	10.0	2.00	0	-	60.2	10.8	0	ND	0.610	0.0854	0	-	1.00	0.180	0			0	ND, -
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	559		10.0	1.40	3790	+	120	66.3	0	ND	0.610	0.171	0	+	2.00	1.10	4349	0.0		4349	+
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	0	ND	10.0	3.20	0	ND	60.2	10.2	0	ND	0.610	0.131	0	ND	1.00	0.170	0			0	ND
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	0	ND	10.0	1.20	0	ND	60.2	22.3	0	ND	0.610	0.226	0	ND	1.00	0.370	0			0	ND
Perfluoro-n-octadecanoic acid (PFODA)	0	ND	10.0	2.20	0	-, *1	60.2	38.6	0	ND	0.610	0.156	0	-, *1 R	1.00	0.640	0			0	ND, -, *1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	0	ND	50.0	49.0	0	ND	1200	1190	0	ND	0.610	0.125	0	ND	20.0	19.8	0			0	ND
N-methylperfluorooctane sulfonamide (NMeFOSA)	0	ND	10.0	1.50	0	ND	60.2	46.4	0	ND	0.610	0.104	0	ND	1.00	0.770	0			0	ND
N-ethylperfluorooctane sulfonamide (NEtFOSA)	0	ND	10.0	1.60	0	ND	60.2	39.8	0	ND	0.610	0.165	0	ND	1.00	0.660	0			0	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)	0	ND	10.0	2.90	0	ND	60.2	17.5	0	ND	0.610	0.174	0	ND R	1.00	0.290	0			0	ND
Perfluorododecanesulfonic acid (PFDoS)	0	ND	10.0	0.950	0	-, *1	60.2	10.8	0	ND	0.610	0.0976	0	-, *1	1.00	0.180	0			0	ND, -, *1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	ND	10.0	1.50	0	ND	60.2	9.64	0	ND	0.610	0.177	0	ND	1.00	0.160	0			0	ND
10:2 Fluorotelomer carboxylic acid	0	ND	10.0	4.20	0	ND	60.2	31.3	0	ND	0.610	0.366	0	ND	1.00	0.520	0			0	ND
6:2 Fluorotelomer carboxylic acid	0	ND	10.0	4.30	0	ND	60.2	60.2	0	ND	0.610	0.366	0	ND	1.00	1.00	0			0	ND
7:3 Fluorotelomer carboxylic acid	0	ND	10.0	3.50	0	ND	60.2	33.7	0	ND	0.610	0.458	0	ND	1.00	0.560	0			0	ND
6:2 Fluorotelemer unsaturated acid	0	ND	10.0	1.40	0	ND	60.2	12.0	0	ND	0.610	0.110	0	ND	1.00	0.200	0			0	ND
8:2 Fluorotelomer carboxylic acid	0	ND	10.0	3.50	0	*1	60.2	22.9	0	ND	0.610	0.397	0	*1	1.00	0.380	0			0	ND, *1
8:2 Fluorotelemer unsaturated acid	0	ND	10.0	2.20	0	ND	60.2	12.0	0	ND	0.610	0.244	0	ND	1.00	0.200	0			0	ND
5:3 Fluorotelomer carboxylic acid	0	ND	10.0	4.80	0	ND	60.2	42.2	0	ND	0.610	0.366	0	ND	1.00	0.700	0			0	ND
3-Perfluoropropylpropanoic acid	0	ND	10.0	2.90	0	ND	60.2	18.7	0	ND	0.610	0.268	0	ND	1.00	0.310	0			0	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	7.19	J	10.0	1.50	3100		60.2	7.23	0	ND	0.610	0.177	2.72		1.00	0.120	3107.19	0.1		3107.19	J
Perfluoro-4-methoxybutanoic acid (PFMBA)	0	ND	10.0	2.00	0	ND	60.2	7.83	0	ND	0.610	0.241	0	ND	1.00	0.130	0			0	ND
Perfluoro-4-ethylcyclohexanesulfonic acid	0	ND	10.0	2.20	0	-	60.2	8.43	0	ND	0.610	0.195	0	-	1.00	0.140	0			0	ND, -
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	0	ND	10.0	1.40	0	ND	60.2	6.02	0	ND	0.610	0.156	0	ND	1.00	0.100	0			0	ND

ANALYTICAL REPORT

PREPARED FOR

Attn: Chris Given
Zeus Industrial Products Inc
3737 Industrial Blvd
Orangeburg, South Carolina 29118

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JOB DESCRIPTION

Zeus Industrial Products - OTM-45

JOB NUMBER

140-31434-1

Eurofins Knoxville

Job Notes

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Authorization



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Authorized for release by
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Definitions/Glossary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
CI	The peak identified by the data system exhibited chromatographic interference that could not be resolved. There is reason to suspect there may be a high bias.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
R	Result Unusable
S1-	Surrogate recovery exceeds control limits, low biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Job ID: 140-31434-1

Laboratory: Eurofins Knoxville

Narrative

Job Narrative 140-31434-1

Revision Notes

This report was revised to update the flagging suite for targets with failing IDA recoveries.

Receipt

The samples were received on 4/19/2023 5:45 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 0.8° C.

LCMS

Field Surrogate Notes:

Field surrogate recoveries are reported in all condensate fractions to monitor for breakthrough.

Several samples were diluted over the standard 50x rate resulting in field surrogates being diluted out. The field surrogates are not re-fortified. The following samples are impacted: 140-31434-2, 140-31434-6, and 140-31434-10.

Several samples are reagent blanks and were not pre-spiked with field surrogate.

Method 537 (Modified)

The compound PFBA has a significant interference that is within the retention time window and therefore prevents the ability to determine an unbiased concentration in the sample. When the presence of the interference is observed, the integration for PFBA is estimated to begin and end at approximately the same integration window as 13C4-PFBA; this will yield an estimated maximum concentration for PFBA in the extract. The PFBA result will also contain a qualifier "CI" indicating the presence of an interference. The following samples are impacted: W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE PBT (140-31434-19), W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-31434-12), W-1067 QC OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE FBT (140-31434-16), W-1074 QC OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE PBT (140-31434-20) and W-1075 QC OTM-45 XAD-2 RESIN TUBE RB (140-31434-21).

Results for samples W-1040,1041 R1 OTM-45 FH (140-31434-1), W-1047,1048 R2 OTM-45 FH (140-31434-5) and W-1054,1055 R3 OTM-45 FH (140-31434-9) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

The required dilution factor for the following samples were higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): W-1042,1043,1045 R1 OTM-45 BH (140-31434-2) and W-1049,1050,1052 R2 OTM-45 BH (140-31434-6). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

One or more Isotope Dilution Analyte (IDA) recoveries are above the method recommended limit for the following samples: W-1061,1062 QC OTM-45 FH FBT (140-31434-13), W-1068,1069 QC OTM-45 FH PBT (140-31434-17), W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-31434-4), W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-31434-8), W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-31434-12), W-1063,1064,1066 QC OTM-45 BH FBT (140-31434-14), W-1067 QC OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE FBT (140-31434-16), W-1070,1071,1073 QC OTM-45 BH PBT (140-31434-18), W-1074 QC OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE PBT (140-31434-20), W-1075 QC OTM-45 XAD-2 RESIN TUBE RB (140-31434-21), (LCS 140-72552/2-B), (LCSD 140-72552/3-B) and (MB 140-72552/14-B). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

One or more Isotope Dilution Analyte (IDA) recoveries associated with the following samples are below the method recommended limit: W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-31434-8), W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Case Narrative

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Job ID: 140-31434-1 (Continued)

Laboratory: Eurofins Knoxville (Continued)

(140-31434-12), W-1063,1064,1066 QC OTM-45 BH FBT (140-31434-14), W-1067 QC OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE FBT (140-31434-16), W-1070,1071,1073 QC OTM-45 BH PBT (140-31434-18), A-1550 OTM-45 MEDIA CHECK XAD (140-31434-25), (LCS 140-72552/2-B), (LCSD 140-72552/3-B), (MB 140-72552/1-B) and (MB 140-72552/14-B). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

One or more Isotope Dilution Analyte (IDA) recoveries associated with the following samples, W-1063,1064,1066 QC OTM-45 BH FBT (140-31434-14), W-1070,1071,1073 QC OTM-45 BH PBT (140-31434-18), W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-31434-8), W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-31434-12), W-1063, A-1550 OTM-45 MEDIA CHECK XAD (140-31434-25), (LCS 140-72552/2-B), (LCSD 140-72552/3-B), (MB 140-72552/1-B) and (MB 140-72552/14-B), are below the method recommended limit of 10%. Generally, re-extraction of samples should be performed if the signal to noise ratio for any IDA is less than 10:1 or the IDA recoveries fall below 10%. With the low IDA recoveries, the target analytes associated with these IDAs may have a high bias. The entire sample was consumed during the extraction or analysis, therefore the data has been reported and targets have been flagged with an "R" flag.

The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 140-72552 and 140-72642 and analytical batch 140-73110 recovered outside acceptance limits for several analytes. The entire sample was consumed during analysis or extraction therefore, the data have been reported.

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 140-72552 and 140-72642 and analytical batch 140-73110 recovered outside control limits for several analytes.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1040,1041 R1 OTM-45 FH

Lab Sample ID: 140-31434-1

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		39.5	25.7	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoropentanoic acid (PFPeA)	ND		19.8	3.56	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorohexanoic acid (PFHxA)	ND		19.8	4.15	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoroheptanoic acid (PFHpA)	ND		19.8	12.2	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorooctanoic acid (PFOA)	ND		19.8	12.8	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorononanoic acid (PFNA)	4.76	J	19.8	1.68	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorodecanoic acid (PFDA)	ND		19.8	4.94	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoroundecanoic acid (PFUnA)	6.80	J	19.8	3.36	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorododecanoic acid (PFDoA)	ND		19.8	1.98	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorotridecanoic acid (PFTriA)	9.79	J	19.8	2.77	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorotetradecanoic acid (PFTeA)	3.93	J	19.8	3.36	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		19.8	5.73	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoro-n-octadecanoic acid (PFODA)	ND		19.8	4.35	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorobutanesulfonic acid (PFBS)	ND		19.8	17.6	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoropentanesulfonic acid (PFPeS)	ND		19.8	2.37	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorohexanesulfonic acid (PFHxS)	ND		19.8	2.17	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoroheptanesulfonic acid (PFHpS)	ND		19.8	2.17	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorooctanesulfonic acid (PFOS)	ND		19.8	8.89	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorononanesulfonic acid (PFNS)	ND		19.8	2.37	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorodecanesulfonic acid (PFDS)	ND		19.8	2.17	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorododecanesulfonic acid (PFDoS)	ND		19.8	1.88	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		19.8	4.35	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluorooctanesulfonamide (FOSA)	ND		19.8	1.74	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		19.8	3.16	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		19.8	2.96	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		98.8	96.8	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		19.8	2.37	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19.8	2.77	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19.8	2.37	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		19.8	1.80	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		98.8	79.0	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		19.8	2.77	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		19.8	6.32	ng/Sample		04/24/23 09:01	05/03/23 16:38	20

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1040,1041 R1 OTM-45 FH

Lab Sample ID: 140-31434-1

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropropylpropanoic acid	ND		19.8	5.73	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
5:3 Fluorotelomer carboxylic acid	ND		19.8	9.48	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
7:3 Fluorotelomer carboxylic acid	ND		19.8	6.91	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
6:2 Fluorotelomer carboxylic acid	ND		19.8	8.49	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
8:2 Fluorotelomer carboxylic acid	ND		19.8	6.91	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
10:2 Fluorotelomer carboxylic acid	ND		19.8	8.30	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
6:2 Fluorotelemer unsaturated acid	ND		19.8	2.77	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
8:2 Fluorotelemer unsaturated acid	ND		19.8	4.35	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1070		19.8	2.77	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		98.8	92.8	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		19.8	1.94	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	ND		19.8	3.95	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoro-3-methoxypropanoic acid (PFMPA)	13.2	J	19.8	2.96	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		19.8	3.95	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		19.8	2.96	ng/Sample		04/24/23 09:01	05/03/23 16:38	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		19.8	2.77	ng/Sample		04/24/23 09:01	05/03/23 16:38	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	85		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C2 PFDaA	91		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C2 PFHxA	85		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C2 PFHxDA	94		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C2 PFTeDA	84		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C2 PFUnA	88		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C3 HFPO-DA	82		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C3 PFBS	91		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C4 PFBA	84		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C4 PFHpA	92		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C4 PFOA	93		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C4 PFOS	93		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C5 PFNA	93		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C5 PFPeA	87		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C8 FOSA	90		25 - 150	04/24/23 09:01	05/03/23 16:38	20
18O2 PFHxS	94		25 - 150	04/24/23 09:01	05/03/23 16:38	20
d3-NMeFOSAA	98		25 - 150	04/24/23 09:01	05/03/23 16:38	20
d5-NEtFOSAA	117		25 - 150	04/24/23 09:01	05/03/23 16:38	20
d7-N-MeFOSE-M	86		25 - 150	04/24/23 09:01	05/03/23 16:38	20
d9-N-EtFOSE-M	86		25 - 150	04/24/23 09:01	05/03/23 16:38	20
d-N-EtFOSA-M	91		25 - 150	04/24/23 09:01	05/03/23 16:38	20
d-N-MeFOSA-M	90		25 - 150	04/24/23 09:01	05/03/23 16:38	20
M2-4:2 FTS	111		25 - 150	04/24/23 09:01	05/03/23 16:38	20
M2-6:2 FTS	107		25 - 150	04/24/23 09:01	05/03/23 16:38	20
M2-8:2 FTS	94		25 - 150	04/24/23 09:01	05/03/23 16:38	20

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1040,1041 R1 OTM-45 FH

Lab Sample ID: 140-31434-1

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-10:2 FTCA	78		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C-6:2 FTCA	67		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C-6:2 FTUCA	128		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C-8:2 FTCA	64		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C-8:2 FTUCA	130		25 - 150	04/24/23 09:01	05/03/23 16:38	20
13C2 10:2 FTS	99		25 - 150	04/24/23 09:01	05/03/23 16:38	20

Client Sample ID: W-1042,1043,1045 R1 OTM-45 BH

Lab Sample ID: 140-31434-2

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1000	940	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoropentanoic acid (PFPeA)	104		100	45.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorohexanoic acid (PFHxA)	ND		100	52.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoroheptanoic acid (PFHpA)	ND		300	260	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorooctanoic acid (PFOA)	ND		100	66.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorononanoic acid (PFNA)	ND		100	89.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorodecanoic acid (PFDA)	ND		100	21.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoroundecanoic acid (PFUnA)	ND		100	27.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorododecanoic acid (PFDoA)	ND		100	12.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorotridecanoic acid (PFTriA)	ND	-	100	17.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		100	23.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		100	52.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		100	26.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		100	20.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		100	15.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorodecanesulfonic acid (PFDS)	ND	-	100	20.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorooctanesulfonamide (FOSA)	ND		100	23.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoropentanesulfonic acid (PFPeS)	ND		100	21.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorononanesulfonic acid (PFNS)	ND	-	100	16.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		100	12.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		100	19.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		100	6.40	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		1000	870	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		100	16.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2000	1100	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	-	100	18.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	-	100	18.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1042,1043,1045 R1 OTM-45 BH

Lab Sample ID: 140-31434-2

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1950	+	200	110	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		100	17.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		100	37.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1	100	64.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		2000	1980	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		100	77.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		100	66.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		100	29.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	100	18.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		100	16.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
10:2 Fluorotelomer carboxylic acid	ND		100	52.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
6:2 Fluorotelomer carboxylic acid	ND		100	100	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
7:3 Fluorotelomer carboxylic acid	ND		100	56.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
6:2 Fluorotelemer unsaturated acid	ND		100	20.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
8:2 Fluorotelomer carboxylic acid	ND	*1	100	38.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
8:2 Fluorotelemer unsaturated acid	ND		100	20.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
5:3 Fluorotelomer carboxylic acid	ND		100	70.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
3-Perfluoropropylpropanoic acid	ND		100	31.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	2800		100	12.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		100	13.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	100	14.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		100	10.0	ng/Sample		04/24/23 08:34	05/09/23 17:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	96		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C4 PFBA	92		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C5 PFPeA	102		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C2 PFHxA	100		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C4 PFHpA	98		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C4 PFOA	103		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C5 PFNA	91		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C2 PFDA	98		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C2 PFUnA	102		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C2 PFDoA	101		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C2 PFTeDA	104		25 - 150				04/24/23 08:34	05/09/23 17:44	1
13C3 PFBS	98		25 - 150				04/24/23 08:34	05/09/23 17:44	1
18O2 PFHxS	99		25 - 150				04/24/23 08:34	05/09/23 17:44	1

Eurofins Knoxville

Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1042,1043,1045 R1 OTM-45 BH

Lab Sample ID: 140-31434-2

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	95		25 - 150	04/24/23 08:34	05/09/23 17:44	1
d3-NMeFOSAA	115		25 - 150	04/24/23 08:34	05/09/23 17:44	1
d5-NEtFOSAA	117		25 - 150	04/24/23 08:34	05/09/23 17:44	1
M2-4:2 FTS	101		25 - 150	04/24/23 08:34	05/09/23 17:44	1
M2-6:2 FTS	103		25 - 150	04/24/23 08:34	05/09/23 17:44	1
M2-8:2 FTS	102		25 - 150	04/24/23 08:34	05/09/23 17:44	1
13C3 HFPO-DA	94		25 - 150	04/24/23 08:34	05/09/23 17:44	1
13C2 PFHxDA	93		25 - 150	04/24/23 08:34	05/09/23 17:44	1
d-N-MeFOSA-M	90		25 - 150	04/24/23 08:34	05/09/23 17:44	1
d7-N-MeFOSE-M	93		25 - 150	04/24/23 08:34	05/09/23 17:44	1
d9-N-EtFOSE-M	97		25 - 150	04/24/23 08:34	05/09/23 17:44	1
d-N-EtFOSA-M	86		25 - 150	04/24/23 08:34	05/09/23 17:44	1
13C2 10:2 FTS	103		25 - 150	04/24/23 08:34	05/09/23 17:44	1
13C-10:2 FTCA	103		25 - 150	04/24/23 08:34	05/09/23 17:44	1
13C-6:2 FTCA	103		25 - 150	04/24/23 08:34	05/09/23 17:44	1
13C-6:2 FTUCA	117		25 - 150	04/24/23 08:34	05/09/23 17:44	1
13C-8:2 FTCA	74		25 - 150	04/24/23 08:34	05/09/23 17:44	1
13C-8:2 FTUCA	117		25 - 150	04/24/23 08:34	05/09/23 17:44	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	13	S1-	50 - 150	04/24/23 08:34	05/09/23 17:44	1
13C8 PFOS	3	S1-	50 - 150	04/24/23 08:34	05/09/23 17:44	1

Client Sample ID: W-1044 R1 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-3

CONDENSATE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.600	0.240	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoropentanoic acid (PFPeA)	ND		0.600	0.0780	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorohexanoic acid (PFHxA)	ND		0.600	0.228	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoroheptanoic acid (PFHpA)	ND		0.600	0.183	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorooctanoic acid (PFOA)	ND		0.600	0.114	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorononanoic acid (PFNA)	ND		0.600	0.0630	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorodecanoic acid (PFDA)	ND		0.600	0.0780	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoroundecanoic acid (PFUnA)	ND		0.600	0.0900	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorododecanoic acid (PFDoA)	ND		0.600	0.0630	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorotridecanoic acid (PFTriA)	ND		0.600	0.0960	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.600	0.135	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.600	0.0540	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.600	0.0690	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		0.600	0.138	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorooctanesulfonic acid (PFOS)	0.715	I CI	0.600	0.0780	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.600	0.0990	ng/Sample		04/27/23 11:24	05/03/23 14:49	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1044 R1 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-3

CONDENSATE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonamide (FOSA)	ND		0.600	0.240	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.600	0.0720	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorononanesulfonic acid (PFNS)	ND		0.600	0.0450	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.600	0.123	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.600	0.0900	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.600	0.0690	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		0.600	0.165	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.600	0.156	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.600	0.282	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.600	0.0780	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.600	0.0840	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.600	0.168	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		0.600	0.129	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		0.600	0.222	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		0.600	0.153	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		0.600	0.123	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.600	0.102	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.600	0.162	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		0.600	0.171	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.600	0.0960	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.600	0.174	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
10:2 Fluorotelomer carboxylic acid	ND		0.600	0.360	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
6:2 Fluorotelomer carboxylic acid	ND		0.600	0.360	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
7:3 Fluorotelomer carboxylic acid	ND		0.600	0.450	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
6:2 Fluorotelemer unsaturated acid	ND		0.600	0.108	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
8:2 Fluorotelomer carboxylic acid	ND		0.600	0.390	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
8:2 Fluorotelemer unsaturated acid	ND		0.600	0.240	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
5:3 Fluorotelomer carboxylic acid	ND		0.600	0.360	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
3-Perfluoropropylpropanoic acid	ND		0.600	0.264	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.600	0.174	ng/Sample		04/27/23 11:24	05/03/23 14:49	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1044 R1 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-3

CONDENSATE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.600	0.237	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		0.600	0.192	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.600	0.153	ng/Sample		04/27/23 11:24	05/03/23 14:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	76		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C4 PFBA	82		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C5 PFPeA	83		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C2 PFHxA	83		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C4 PFHpA	85		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C4 PFOA	87		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C5 PFNA	86		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C2 PFDA	82		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C2 PFUnA	80		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C2 PFDoA	64		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C2 PFTeDA	61		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C3 PFBS	81		25 - 150				04/27/23 11:24	05/03/23 14:49	1
18O2 PFHxS	85		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C4 PFOS	87		25 - 150				04/27/23 11:24	05/03/23 14:49	1
d3-NMeFOSAA	87		25 - 150				04/27/23 11:24	05/03/23 14:49	1
d5-NEtFOSAA	100		25 - 150				04/27/23 11:24	05/03/23 14:49	1
M2-4:2 FTS	92		25 - 150				04/27/23 11:24	05/03/23 14:49	1
M2-6:2 FTS	100		25 - 150				04/27/23 11:24	05/03/23 14:49	1
M2-8:2 FTS	108		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C3 HFPO-DA	84		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C2 PFHxDA	72		25 - 150				04/27/23 11:24	05/03/23 14:49	1
d-N-MeFOSA-M	61		25 - 150				04/27/23 11:24	05/03/23 14:49	1
d7-N-MeFOSE-M	57		25 - 150				04/27/23 11:24	05/03/23 14:49	1
d9-N-EtFOSE-M	61		25 - 150				04/27/23 11:24	05/03/23 14:49	1
d-N-EtFOSA-M	64		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C2 10:2 FTS	97		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C-10:2 FTCA	89		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C-6:2 FTCA	84		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C-6:2 FTUCA	102		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C-8:2 FTCA	83		25 - 150				04/27/23 11:24	05/03/23 14:49	1
13C-8:2 FTUCA	107		25 - 150				04/27/23 11:24	05/03/23 14:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	0.002	S1-	50 - 150				04/27/23 11:24	05/03/23 14:49	1
13C8 PFOS	0	S1-	50 - 150				04/27/23 11:24	05/03/23 14:49	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1046 R1 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-4

XAD-2 RESIN TUBE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	11.9		10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoropentanoic acid (PFPeA)	3.65		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorooctanoic acid (PFOA)	1.63		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	+	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*-1	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 15:04	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1046 R1 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-4

XAD-2 RESIN TUBE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.67		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 15:04	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 15:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	137		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C4 PFBA	98		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C5 PFPeA	121		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C2 PFHxA	139		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C4 PFHpA	123		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C4 PFOA	129		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C5 PFNA	149		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C2 PFDA	154	*5+	25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C2 PFUnA	150		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C2 PFDoA	120		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C2 PFTeDA	99		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C3 PFBS	121		25 - 150	04/24/23 08:34	05/09/23 15:04	1
18O2 PFHxS	108		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C4 PFOS	126		25 - 150	04/24/23 08:34	05/09/23 15:04	1
d3-NMeFOSAA	159	*5+	25 - 150	04/24/23 08:34	05/09/23 15:04	1
d5-NEtFOSAA	170	*5+	25 - 150	04/24/23 08:34	05/09/23 15:04	1
M2-4:2 FTS	213	*5+	25 - 150	04/24/23 08:34	05/09/23 15:04	1
M2-6:2 FTS	164	*5+	25 - 150	04/24/23 08:34	05/09/23 15:04	1
M2-8:2 FTS	211	*5+	25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C3 HFPO-DA	114		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C2 PFHxDA	32		25 - 150	04/24/23 08:34	05/09/23 15:04	1
d-N-MeFOSA-M	102		25 - 150	04/24/23 08:34	05/09/23 15:04	1
d7-N-MeFOSE-M	60		25 - 150	04/24/23 08:34	05/09/23 15:04	1
d9-N-EtFOSE-M	42		25 - 150	04/24/23 08:34	05/09/23 15:04	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1046 R1 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-4

XAD-2 RESIN TUBE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d-N-EtFOSA-M	74		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C2 10:2 FTS	137		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C-10:2 FTCA	65		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C-6:2 FTCA	68		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C-6:2 FTUCA	240	*5+	25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C-8:2 FTCA	78		25 - 150	04/24/23 08:34	05/09/23 15:04	1
13C-8:2 FTUCA	234	*5+	25 - 150	04/24/23 08:34	05/09/23 15:04	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	70		50 - 150	04/24/23 08:34	05/09/23 15:04	1
13C8 PFOS	79		50 - 150	04/24/23 08:34	05/09/23 15:04	1

Client Sample ID: W-1047,1048 R2 OTM-45 FH

Lab Sample ID: 140-31434-5

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		19.7	12.8	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoropentanoic acid (PFPeA)	ND		9.85	1.77	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorohexanoic acid (PFHxA)	ND		9.85	2.07	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoroheptanoic acid (PFHpA)	ND		9.85	6.11	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorooctanoic acid (PFOA)	ND		9.85	6.40	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorononanoic acid (PFNA)	ND		9.85	0.837	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorodecanoic acid (PFDA)	ND		9.85	2.46	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoroundecanoic acid (PFUnA)	ND		9.85	1.67	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorododecanoic acid (PFDoA)	1.21	J	9.85	0.985	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorotridecanoic acid (PFTriA)	3.48	J	9.85	1.38	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorotetradecanoic acid (PFTeA)	2.60	J	9.85	1.67	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		9.85	2.86	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoro-n-octadecanoic acid (PFODA)	ND		9.85	2.17	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorobutanesulfonic acid (PFBS)	ND		9.85	8.77	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoropentanesulfonic acid (PFPeS)	ND		9.85	1.18	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorohexanesulfonic acid (PFHxS)	ND		9.85	1.08	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoroheptanesulfonic acid (PFHpS)	ND		9.85	1.08	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorooctanesulfonic acid (PFOS)	ND		9.85	4.43	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorononanesulfonic acid (PFNS)	ND		9.85	1.18	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorodecanesulfonic acid (PFDS)	ND		9.85	1.08	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorododecanesulfonic acid (PFDoS)	ND		9.85	0.936	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		9.85	2.17	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluorooctanesulfonamide (FOSA)	ND		9.85	0.867	ng/Sample		04/24/23 09:01	05/03/23 16:47	10

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1047,1048 R2 OTM-45 FH

Lab Sample ID: 140-31434-5

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NETFOSA)	ND		9.85	1.58	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		9.85	1.48	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		49.2	48.3	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		9.85	1.18	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	ND		9.85	1.38	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		9.85	1.18	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		9.85	0.896	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		49.2	39.4	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		9.85	1.38	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		9.85	3.15	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
3-Perfluoropropylpropanoic acid	ND		9.85	2.86	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
5:3 Fluorotelomer carboxylic acid	ND		9.85	4.73	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
7:3 Fluorotelomer carboxylic acid	ND		9.85	3.45	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
6:2 Fluorotelomer carboxylic acid	ND		9.85	4.23	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
8:2 Fluorotelomer carboxylic acid	ND		9.85	3.45	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
10:2 Fluorotelomer carboxylic acid	ND		9.85	4.14	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
6:2 Fluorotelemer unsaturated acid	ND		9.85	1.38	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
8:2 Fluorotelemer unsaturated acid	ND		9.85	2.17	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	693		9.85	1.38	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		49.2	46.3	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		9.85	0.965	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		9.85	1.97	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoro-3-methoxypropanoic acid (PFMPA)	10.0		9.85	1.48	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		9.85	1.97	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		9.85	1.48	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		9.85	1.38	ng/Sample		04/24/23 09:01	05/03/23 16:47	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	86		25 - 150				04/24/23 09:01	05/03/23 16:47	10
13C2 PFDaA	86		25 - 150				04/24/23 09:01	05/03/23 16:47	10
13C2 PFHxA	84		25 - 150				04/24/23 09:01	05/03/23 16:47	10
13C2 PFHxDA	81		25 - 150				04/24/23 09:01	05/03/23 16:47	10
13C2 PFTeDA	81		25 - 150				04/24/23 09:01	05/03/23 16:47	10
13C2 PFUnA	85		25 - 150				04/24/23 09:01	05/03/23 16:47	10

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1047,1048 R2 OTM-45 FH

Lab Sample ID: 140-31434-5

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	85		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C3 PFBS	88		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C4 PFBA	83		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C4 PFHpA	86		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C4 PFOA	92		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C4 PFOS	90		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C5 PFNA	87		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C5 PFPeA	87		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C8 FOSA	83		25 - 150	04/24/23 09:01	05/03/23 16:47	10
18O2 PFHxS	89		25 - 150	04/24/23 09:01	05/03/23 16:47	10
d3-NMeFOSAA	95		25 - 150	04/24/23 09:01	05/03/23 16:47	10
d5-NEtFOSAA	104		25 - 150	04/24/23 09:01	05/03/23 16:47	10
d7-N-MeFOSE-M	82		25 - 150	04/24/23 09:01	05/03/23 16:47	10
d9-N-EtFOSE-M	82		25 - 150	04/24/23 09:01	05/03/23 16:47	10
d-N-EtFOSA-M	90		25 - 150	04/24/23 09:01	05/03/23 16:47	10
d-N-MeFOSA-M	78		25 - 150	04/24/23 09:01	05/03/23 16:47	10
M2-4:2 FTS	116		25 - 150	04/24/23 09:01	05/03/23 16:47	10
M2-6:2 FTS	113		25 - 150	04/24/23 09:01	05/03/23 16:47	10
M2-8:2 FTS	97		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C-10:2 FTCA	74		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C-6:2 FTCA	69		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C-6:2 FTUCA	111		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C-8:2 FTCA	70		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C-8:2 FTUCA	118		25 - 150	04/24/23 09:01	05/03/23 16:47	10
13C2 10:2 FTS	92		25 - 150	04/24/23 09:01	05/03/23 16:47	10

Client Sample ID: W-1049,1050,1052 R2 OTM-45 BH

Lab Sample ID: 140-31434-6

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1000	940	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoropentanoic acid (PFPeA)	ND		100	45.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorohexanoic acid (PFHxA)	ND		100	52.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoroheptanoic acid (PFHpA)	ND		300	260	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorooctanoic acid (PFOA)	ND		100	66.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorononanoic acid (PFNA)	ND		100	89.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorodecanoic acid (PFDA)	ND		100	21.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoroundecanoic acid (PFUnA)	ND		100	27.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorododecanoic acid (PFDoA)	ND		100	12.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorotridecanoic acid (PFTriA)	ND	*	100	17.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		100	23.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		100	52.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		100	26.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		100	20.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		100	15.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1049,1050,1052 R2 OTM-45 BH

Lab Sample ID: 140-31434-6

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanesulfonic acid (PFDS)	ND	*-	100	20.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorooctanesulfonamide (FOSA)	ND		100	23.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoropentanesulfonic acid (PFPeS)	ND		100	21.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorononanesulfonic acid (PFNS)	ND	*-	100	16.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		100	12.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		100	19.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		100	6.40	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		1000	870	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		100	16.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2000	1100	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*-	100	18.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*-	100	18.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8280	++	200	110	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		100	17.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		100	37.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1	100	64.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		2000	1980	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		100	77.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		100	66.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		100	29.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	100	18.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		100	16.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
10:2 Fluorotelomer carboxylic acid	ND		100	52.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
6:2 Fluorotelomer carboxylic acid	ND		100	100	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
7:3 Fluorotelomer carboxylic acid	ND		100	56.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
6:2 Fluorotelemer unsaturated acid	ND		100	20.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
8:2 Fluorotelomer carboxylic acid	ND	*1	100	38.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
8:2 Fluorotelemer unsaturated acid	ND		100	20.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
5:3 Fluorotelomer carboxylic acid	ND		100	70.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
3-Perfluoropropylpropanoic acid	ND		100	31.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	3280		100	12.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1049,1050,1052 R2 OTM-45 BH

Lab Sample ID: 140-31434-6

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		100	13.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*	100	14.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		100	10.0	ng/Sample		04/24/23 08:34	05/09/23 15:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	93		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C4 PFBA	86		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C5 PFPeA	95		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C2 PFHxA	100		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C4 PFHpA	104		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C4 PFOA	100		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C5 PFNA	101		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C2 PFDA	96		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C2 PFUnA	106		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C2 PFDoA	101		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C2 PFTeDA	98		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C3 PFBS	95		25 - 150	04/24/23 08:34	05/09/23 15:12	1
18O2 PFHxS	97		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C4 PFOS	89		25 - 150	04/24/23 08:34	05/09/23 15:12	1
d3-NMeFOSAA	108		25 - 150	04/24/23 08:34	05/09/23 15:12	1
d5-NEtFOSAA	108		25 - 150	04/24/23 08:34	05/09/23 15:12	1
M2-4:2 FTS	119		25 - 150	04/24/23 08:34	05/09/23 15:12	1
M2-6:2 FTS	116		25 - 150	04/24/23 08:34	05/09/23 15:12	1
M2-8:2 FTS	106		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C3 HFPO-DA	96		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C2 PFHxDA	93		25 - 150	04/24/23 08:34	05/09/23 15:12	1
d-N-MeFOSA-M	86		25 - 150	04/24/23 08:34	05/09/23 15:12	1
d7-N-MeFOSE-M	90		25 - 150	04/24/23 08:34	05/09/23 15:12	1
d9-N-EtFOSE-M	94		25 - 150	04/24/23 08:34	05/09/23 15:12	1
d-N-EtFOSA-M	77		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C2 10:2 FTS	85		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C-10:2 FTCA	127		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C-6:2 FTCA	92		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C-6:2 FTUCA	105		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C-8:2 FTCA	84		25 - 150	04/24/23 08:34	05/09/23 15:12	1
13C-8:2 FTUCA	105		25 - 150	04/24/23 08:34	05/09/23 15:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	89		50 - 150	04/24/23 08:34	05/09/23 15:12	1
13C8 PFOS	26	S1-	50 - 150	04/24/23 08:34	05/09/23 15:12	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1051 R2 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-7

CONDENSATE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.620	0.248	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoropentanoic acid (PFPeA)	ND		0.620	0.0806	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorohexanoic acid (PFHxA)	ND		0.620	0.236	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoroheptanoic acid (PFHpA)	ND		0.620	0.189	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorooctanoic acid (PFOA)	ND		0.620	0.118	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorononanoic acid (PFNA)	ND		0.620	0.0651	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorodecanoic acid (PFDA)	ND		0.620	0.0806	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoroundecanoic acid (PFUnA)	ND		0.620	0.0930	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorododecanoic acid (PFDoA)	ND		0.620	0.0651	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorotridecanoic acid (PFTriA)	ND		0.620	0.0992	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.620	0.140	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.620	0.0558	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.620	0.0713	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		0.620	0.143	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.620	0.0806	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.620	0.102	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorooctanesulfonamide (FOSA)	ND		0.620	0.248	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.620	0.0744	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorononanesulfonic acid (PFNS)	ND		0.620	0.0465	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.620	0.127	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.620	0.0930	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.620	0.0713	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		0.620	0.171	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.620	0.161	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.620	0.291	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.620	0.0806	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.620	0.0868	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.620	0.174	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		0.620	0.133	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		0.620	0.229	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		0.620	0.158	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		0.620	0.127	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.620	0.105	ng/Sample		04/27/23 11:24	05/03/23 14:59	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1051 R2 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-7

CONDENSATE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.620	0.167	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		0.620	0.177	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.620	0.0992	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.620	0.180	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
10:2 Fluorotelomer carboxylic acid	ND		0.620	0.372	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
6:2 Fluorotelomer carboxylic acid	ND		0.620	0.372	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
7:3 Fluorotelomer carboxylic acid	ND		0.620	0.465	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
6:2 Fluorotelemer unsaturated acid	ND		0.620	0.112	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
8:2 Fluorotelomer carboxylic acid	ND		0.620	0.403	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
8:2 Fluorotelemer unsaturated acid	ND		0.620	0.248	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
5:3 Fluorotelomer carboxylic acid	ND		0.620	0.372	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
3-Perfluoropropylpropanoic acid	ND		0.620	0.273	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.620	0.180	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.620	0.245	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		0.620	0.198	ng/Sample		04/27/23 11:24	05/03/23 14:59	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.620	0.158	ng/Sample		04/27/23 11:24	05/03/23 14:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	65		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C4 PFBA	87		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C5 PFPeA	91		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C2 PFHxA	86		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C4 PFHpA	90		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C4 PFOA	90		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C5 PFNA	86		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C2 PFDA	87		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C2 PFUnA	87		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C2 PFDoA	71		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C2 PFTeDA	55		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C3 PFBS	90		25 - 150	04/27/23 11:24	05/03/23 14:59	1
18O2 PFHxS	93		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C4 PFOS	91		25 - 150	04/27/23 11:24	05/03/23 14:59	1
d3-NMeFOSAA	81		25 - 150	04/27/23 11:24	05/03/23 14:59	1
d5-NEtFOSAA	79		25 - 150	04/27/23 11:24	05/03/23 14:59	1
M2-4:2 FTS	100		25 - 150	04/27/23 11:24	05/03/23 14:59	1
M2-6:2 FTS	95		25 - 150	04/27/23 11:24	05/03/23 14:59	1
M2-8:2 FTS	97		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C3 HFPO-DA	82		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C2 PFHxDA	71		25 - 150	04/27/23 11:24	05/03/23 14:59	1
d-N-MeFOSA-M	51		25 - 150	04/27/23 11:24	05/03/23 14:59	1
d7-N-MeFOSE-M	52		25 - 150	04/27/23 11:24	05/03/23 14:59	1
d9-N-EtFOSE-M	52		25 - 150	04/27/23 11:24	05/03/23 14:59	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1051 R2 OTM-45 IMPINGERS 1,2&3 CONDENSATE

Lab Sample ID: 140-31434-7

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d-N-EtFOSA-M	52		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C2 10:2 FTS	92		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C-10:2 FTCA	61		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C-6:2 FTCA	83		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C-6:2 FTUCA	109		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C-8:2 FTCA	88		25 - 150	04/27/23 11:24	05/03/23 14:59	1
13C-8:2 FTUCA	110		25 - 150	04/27/23 11:24	05/03/23 14:59	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0	S1-	50 - 150	04/27/23 11:24	05/03/23 14:59	1
13C8 PFOS	0	S1-	50 - 150	04/27/23 11:24	05/03/23 14:59	1

Client Sample ID: W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-31434-8

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoropentanoic acid (PFPeA)	2.85		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorohexanoic acid (PFHxA)	0.615	J	1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorooctanoic acid (PFOA)	1.21		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 15:21	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1053 R2 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-8

XAD-2 RESIN TUBE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.17	J **	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND	R	1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1 R	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	R	1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	4.20		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 15:21	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 15:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	120		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C4 PFBA	106		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C5 PFPeA	126		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C2 PFHxA	132		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C4 PFHpA	122		25 - 150	04/24/23 08:34	05/09/23 15:21	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1053 R2 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-8

XAD-2 RESIN TUBE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	117		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C5 PFNA	133		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C2 PFDA	129		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C2 PFUnA	93		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C2 PFDoA	67		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C2 PFTeDA	25		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C3 PFBS	121		25 - 150	04/24/23 08:34	05/09/23 15:21	1
18O2 PFHxS	105		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C4 PFOS	114		25 - 150	04/24/23 08:34	05/09/23 15:21	1
d3-NMeFOSAA	115		25 - 150	04/24/23 08:34	05/09/23 15:21	1
d5-NEtFOSAA	104		25 - 150	04/24/23 08:34	05/09/23 15:21	1
M2-4:2 FTS	199	*5+	25 - 150	04/24/23 08:34	05/09/23 15:21	1
M2-6:2 FTS	136		25 - 150	04/24/23 08:34	05/09/23 15:21	1
M2-8:2 FTS	127		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C3 HFPO-DA	111		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C2 PFHxDA	4	*5-	25 - 150	04/24/23 08:34	05/09/23 15:21	1
d-N-MeFOSA-M	69		25 - 150	04/24/23 08:34	05/09/23 15:21	1
d7-N-MeFOSE-M	11	*5-	25 - 150	04/24/23 08:34	05/09/23 15:21	1
d9-N-EtFOSE-M	7	*5-	25 - 150	04/24/23 08:34	05/09/23 15:21	1
d-N-EtFOSA-M	41		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C2 10:2 FTS	59		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C-10:2 FTCA	41		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C-6:2 FTCA	71		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C-6:2 FTUCA	219	*5+	25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C-8:2 FTCA	57		25 - 150	04/24/23 08:34	05/09/23 15:21	1
13C-8:2 FTUCA	204	*5+	25 - 150	04/24/23 08:34	05/09/23 15:21	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	78		50 - 150	04/24/23 08:34	05/09/23 15:21	1
13C8 PFOS	80		50 - 150	04/24/23 08:34	05/09/23 15:21	1

Client Sample ID: W-1054,1055 R3 OTM-45 FH

Lab Sample ID: 140-31434-9

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		20.0	13.0	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoropentanoic acid (PFPeA)	6.78	J	10.0	1.80	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorohexanoic acid (PFHxA)	ND		10.0	2.10	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoroheptanoic acid (PFHpA)	ND		10.0	6.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorooctanoic acid (PFOA)	ND		10.0	6.50	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorononanoic acid (PFNA)	1.46	J	10.0	0.850	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorodecanoic acid (PFDA)	ND		10.0	2.50	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoroundecanoic acid (PFUnA)	ND		10.0	1.70	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorododecanoic acid (PFDoA)	ND		10.0	1.00	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorotridecanoic acid (PFTriA)	2.52	J	10.0	1.40	ng/Sample		04/24/23 09:01	05/03/23 16:56	10

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1054,1055 R3 OTM-45 FH

Lab Sample ID: 140-31434-9

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	ND		10.0	1.70	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		10.0	2.90	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoro-n-octadecanoic acid (PFODA)	ND		10.0	2.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorobutanesulfonic acid (PFBS)	ND		10.0	8.90	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoropentanesulfonic acid (PFPeS)	ND		10.0	1.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorohexanesulfonic acid (PFHxS)	ND		10.0	1.10	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoroheptanesulfonic acid (PFHpS)	ND		10.0	1.10	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorooctanesulfonic acid (PFOS)	ND		10.0	4.50	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorononanesulfonic acid (PFNS)	ND		10.0	1.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorodecanesulfonic acid (PFDS)	ND		10.0	1.10	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorododecanesulfonic acid (PFDoS)	ND		10.0	0.950	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		10.0	2.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluorooctanesulfonamide (FOSA)	ND		10.0	0.880	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		10.0	1.60	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		10.0	1.50	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		50.0	49.0	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		10.0	1.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		10.0	1.40	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		10.0	1.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		10.0	0.910	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		50.0	40.0	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		10.0	1.40	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		10.0	3.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
3-Perfluoropropylpropanoic acid	ND		10.0	2.90	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
5:3 Fluorotelomer carboxylic acid	ND		10.0	4.80	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
7:3 Fluorotelomer carboxylic acid	ND		10.0	3.50	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
6:2 Fluorotelomer carboxylic acid	ND		10.0	4.30	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
8:2 Fluorotelomer carboxylic acid	ND		10.0	3.50	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
10:2 Fluorotelomer carboxylic acid	ND		10.0	4.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
6:2 Fluorotelemer unsaturated acid	ND		10.0	1.40	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
8:2 Fluorotelemer unsaturated acid	ND		10.0	2.20	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	559		10.0	1.40	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		50.0	47.0	ng/Sample		04/24/23 09:01	05/03/23 16:56	10

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1054,1055 R3 OTM-45 FH

Lab Sample ID: 140-31434-9

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		10.0	0.980	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	ND		10.0	2.00	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoro-3-methoxypropanoic acid (PFMPA)	7.19	J	10.0	1.50	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		10.0	2.00	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		10.0	1.50	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		10.0	1.40	ng/Sample		04/24/23 09:01	05/03/23 16:56	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	90		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C2 PFDoA	88		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C2 PFHxA	88		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C2 PFHxDA	83		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C2 PFTeDA	92		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C2 PFUnA	90		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C3 HFPO-DA	85		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C3 PFBS	94		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C4 PFBA	87		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C4 PFHpA	95		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C4 PFOA	92		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C4 PFOS	89		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C5 PFNA	92		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C5 PFPeA	91		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C8 FOSA	97		25 - 150				04/24/23 09:01	05/03/23 16:56	10
18O2 PFHxS	92		25 - 150				04/24/23 09:01	05/03/23 16:56	10
d3-NMeFOSAA	105		25 - 150				04/24/23 09:01	05/03/23 16:56	10
d5-NEtFOSAA	109		25 - 150				04/24/23 09:01	05/03/23 16:56	10
d7-N-MeFOSE-M	90		25 - 150				04/24/23 09:01	05/03/23 16:56	10
d9-N-EtFOSE-M	91		25 - 150				04/24/23 09:01	05/03/23 16:56	10
d-N-EtFOSA-M	105		25 - 150				04/24/23 09:01	05/03/23 16:56	10
d-N-MeFOSA-M	98		25 - 150				04/24/23 09:01	05/03/23 16:56	10
M2-4:2 FTS	112		25 - 150				04/24/23 09:01	05/03/23 16:56	10
M2-6:2 FTS	110		25 - 150				04/24/23 09:01	05/03/23 16:56	10
M2-8:2 FTS	90		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C-10:2 FTCA	89		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C-6:2 FTCA	79		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C-6:2 FTUCA	126		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C-8:2 FTCA	65		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C-8:2 FTUCA	141		25 - 150				04/24/23 09:01	05/03/23 16:56	10
13C2 10:2 FTS	86		25 - 150				04/24/23 09:01	05/03/23 16:56	10

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1056,1057,1059 R3 OTM-45 BH

Lab Sample ID: 140-31434-10

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		602	566	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoropentanoic acid (PFPeA)	32.5	J	60.2	27.1	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorohexanoic acid (PFHxA)	ND		60.2	31.3	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoroheptanoic acid (PFHpA)	ND		181	157	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorooctanoic acid (PFOA)	ND		60.2	39.8	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorononanoic acid (PFNA)	ND		60.2	53.6	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorodecanoic acid (PFDA)	ND		60.2	12.7	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoroundecanoic acid (PFUnA)	ND		60.2	16.3	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorododecanoic acid (PFDoA)	ND		60.2	7.23	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorotridecanoic acid (PFTriA)	ND	*-	60.2	10.2	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		60.2	13.9	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		60.2	31.3	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		60.2	15.7	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		60.2	12.0	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		60.2	9.04	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorodecanesulfonic acid (PFDS)	ND	*-	60.2	12.0	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorooctanesulfonamide (FOSA)	ND		60.2	13.9	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoropentanesulfonic acid (PFPeS)	ND		60.2	12.7	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorononanesulfonic acid (PFNS)	ND	*-	60.2	9.64	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		60.2	7.23	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		60.2	11.4	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		60.2	3.86	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		602	524	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		60.2	9.64	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1200	663	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*-	60.2	10.8	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*-	60.2	10.8	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	3790	++	120	66.3	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		60.2	10.2	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		60.2	22.3	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1	60.2	38.6	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		1200	1190	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		60.2	46.4	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		60.2	39.8	ng/Sample		04/24/23 08:34	05/17/23 09:03	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1056,1057,1059 R3 OTM-45 BH

Lab Sample ID: 140-31434-10

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		60.2	17.5	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	60.2	10.8	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		60.2	9.64	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
10:2 Fluorotelomer carboxylic acid	ND		60.2	31.3	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
6:2 Fluorotelomer carboxylic acid	ND		60.2	60.2	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
7:3 Fluorotelomer carboxylic acid	ND		60.2	33.7	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
6:2 Fluorotelemer unsaturated acid	ND		60.2	12.0	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
8:2 Fluorotelomer carboxylic acid	ND	*1	60.2	22.9	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
8:2 Fluorotelemer unsaturated acid	ND		60.2	12.0	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
5:3 Fluorotelomer carboxylic acid	ND		60.2	42.2	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
3-Perfluoropropylpropanoic acid	ND		60.2	18.7	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	3100		60.2	7.23	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		60.2	7.83	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	60.2	8.43	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		60.2	6.02	ng/Sample		04/24/23 08:34	05/17/23 09:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	88		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C4 PFBA	69		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C5 PFPeA	87		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C2 PFHxA	81		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C4 PFHpA	79		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C4 PFOA	89		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C5 PFNA	86		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C2 PFDA	94		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C2 PFUnA	87		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C2 PFDoA	82		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C2 PFTeDA	80		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C3 PFBS	90		25 - 150				04/24/23 08:34	05/17/23 09:03	1
18O2 PFHxS	81		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C4 PFOS	82		25 - 150				04/24/23 08:34	05/17/23 09:03	1
d3-NMeFOSAA	98		25 - 150				04/24/23 08:34	05/17/23 09:03	1
d5-NEtFOSAA	107		25 - 150				04/24/23 08:34	05/17/23 09:03	1
M2-4:2 FTS	102		25 - 150				04/24/23 08:34	05/17/23 09:03	1
M2-6:2 FTS	95		25 - 150				04/24/23 08:34	05/17/23 09:03	1
M2-8:2 FTS	88		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C3 HFPO-DA	81		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C2 PFHxDA	92		25 - 150				04/24/23 08:34	05/17/23 09:03	1
d-N-MeFOSA-M	81		25 - 150				04/24/23 08:34	05/17/23 09:03	1
d7-N-MeFOSE-M	80		25 - 150				04/24/23 08:34	05/17/23 09:03	1
d9-N-EtFOSE-M	78		25 - 150				04/24/23 08:34	05/17/23 09:03	1
d-N-EtFOSA-M	74		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C2 10:2 FTS	64		25 - 150				04/24/23 08:34	05/17/23 09:03	1
13C-10:2 FTCA	115		25 - 150				04/24/23 08:34	05/17/23 09:03	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1056,1057,1059 R3 OTM-45 BH

Lab Sample ID: 140-31434-10

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-6:2 FTCA	74		25 - 150	04/24/23 08:34	05/17/23 09:03	1
13C-6:2 FTUCA	94		25 - 150	04/24/23 08:34	05/17/23 09:03	1
13C-8:2 FTCA	62		25 - 150	04/24/23 08:34	05/17/23 09:03	1
13C-8:2 FTUCA	90		25 - 150	04/24/23 08:34	05/17/23 09:03	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	7	S1-	50 - 150	04/24/23 08:34	05/17/23 09:03	1
13C8 PFOS	0.5	S1-	50 - 150	04/24/23 08:34	05/17/23 09:03	1

Client Sample ID: W-1058 R3 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-11

CONDENSATE

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.610	0.244	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoropentanoic acid (PFPeA)	ND		0.610	0.0793	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorohexanoic acid (PFHxA)	ND		0.610	0.232	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoroheptanoic acid (PFHpA)	ND		0.610	0.186	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorooctanoic acid (PFOA)	ND		0.610	0.116	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorononanoic acid (PFNA)	ND		0.610	0.0641	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorodecanoic acid (PFDA)	ND		0.610	0.0793	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoroundecanoic acid (PFUnA)	ND		0.610	0.0915	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorododecanoic acid (PFDoA)	ND		0.610	0.0641	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorotridecanoic acid (PFTriA)	ND		0.610	0.0976	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.610	0.137	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.610	0.0549	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.610	0.0702	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		0.610	0.140	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.610	0.0793	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.610	0.101	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorooctanesulfonamide (FOSA)	ND		0.610	0.244	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.610	0.0732	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorononanesulfonic acid (PFNS)	ND		0.610	0.0458	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.610	0.125	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.610	0.0915	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.610	0.0702	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		0.610	0.168	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.610	0.159	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.610	0.287	ng/Sample		04/27/23 11:24	05/03/23 15:08	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1058 R3 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-11

CONDENSATE

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		0.610	0.0793	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	ND		0.610	0.0854	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.610	0.171	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		0.610	0.131	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
2- (N-ethylperfluoro-1-octanesulfonamid o) ethanol	ND		0.610	0.226	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		0.610	0.156	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
2- (N-methylperfluoro-1-octanesulfonami do) ethanol	ND		0.610	0.125	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.610	0.104	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.610	0.165	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		0.610	0.174	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.610	0.0976	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.610	0.177	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
10:2 Fluorotelomer carboxylic acid	ND		0.610	0.366	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
6:2 Fluorotelomer carboxylic acid	ND		0.610	0.366	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
7:3 Fluorotelomer carboxylic acid	ND		0.610	0.458	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
6:2 Fluorotelemer carboxylic acid	ND		0.610	0.110	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
8:2 Fluorotelomer carboxylic acid	ND		0.610	0.397	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
8:2 Fluorotelemer unsaturated acid	ND		0.610	0.244	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
5:3 Fluorotelomer carboxylic acid	ND		0.610	0.366	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
3-Perfluoropropylpropanoic acid	ND		0.610	0.268	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.610	0.177	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.610	0.241	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		0.610	0.195	ng/Sample		04/27/23 11:24	05/03/23 15:08	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	ND		0.610	0.156	ng/Sample		04/27/23 11:24	05/03/23 15:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	85		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C4 PFBA	81		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C5 PFPeA	87		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C2 PFHxA	84		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C4 PFHpA	87		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C4 PFOA	88		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C5 PFNA	85		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C2 PFDA	86		25 - 150	04/27/23 11:24	05/03/23 15:08	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1058 R3 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-11

CONDENSATE

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	78		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C2 PFDoA	75		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C2 PFTeDA	59		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C3 PFBS	78		25 - 150	04/27/23 11:24	05/03/23 15:08	1
18O2 PFHxS	84		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C4 PFOS	83		25 - 150	04/27/23 11:24	05/03/23 15:08	1
d3-NMeFOSAA	92		25 - 150	04/27/23 11:24	05/03/23 15:08	1
d5-NEtFOSAA	101		25 - 150	04/27/23 11:24	05/03/23 15:08	1
M2-4:2 FTS	86		25 - 150	04/27/23 11:24	05/03/23 15:08	1
M2-6:2 FTS	100		25 - 150	04/27/23 11:24	05/03/23 15:08	1
M2-8:2 FTS	87		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C3 HFPO-DA	77		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C2 PFHxDA	69		25 - 150	04/27/23 11:24	05/03/23 15:08	1
d-N-MeFOSA-M	65		25 - 150	04/27/23 11:24	05/03/23 15:08	1
d7-N-MeFOSE-M	55		25 - 150	04/27/23 11:24	05/03/23 15:08	1
d9-N-EtFOSE-M	52		25 - 150	04/27/23 11:24	05/03/23 15:08	1
d-N-EtFOSA-M	60		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C2 10:2 FTS	91		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C-10:2 FTCA	91		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C-6:2 FTCA	68		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C-6:2 FTUCA	105		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C-8:2 FTCA	76		25 - 150	04/27/23 11:24	05/03/23 15:08	1
13C-8:2 FTUCA	110		25 - 150	04/27/23 11:24	05/03/23 15:08	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0	S1-	50 - 150	04/27/23 11:24	05/03/23 15:08	1
13C8 PFOS	0	S1-	50 - 150	04/27/23 11:24	05/03/23 15:08	1

Client Sample ID: W-1060 R3 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-12

XAD-2 RESIN TUBE

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	CI	10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoropentanoic acid (PFPeA)	1.38		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorotridecanoic acid (PFTriA)	ND	*-	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:39	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1060 R3 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-12

XAD-2 RESIN TUBE

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorodecanesulfonic acid (PFDS)	ND	*-	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorononanesulfonic acid (PFNS)	ND	*-	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*+	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1 R	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	R	1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 15:39	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1060 R3 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-12

XAD-2 RESIN TUBE

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.72		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 15:39	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 15:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	114		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C4 PFBA	89		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C5 PFPeA	122		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C2 PFHxA	124		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C4 PFHpA	114		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C4 PFOA	119		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C5 PFNA	121		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C2 PFDA	107		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C2 PFUnA	89		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C2 PFDoA	68		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C2 PFTeDA	28		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C3 PFBS	116		25 - 150	04/24/23 08:34	05/09/23 15:39	1
18O2 PFHxS	98		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C4 PFOS	101		25 - 150	04/24/23 08:34	05/09/23 15:39	1
d3-NMeFOSAA	111		25 - 150	04/24/23 08:34	05/09/23 15:39	1
d5-NEtFOSAA	103		25 - 150	04/24/23 08:34	05/09/23 15:39	1
M2-4:2 FTS	173	*5+	25 - 150	04/24/23 08:34	05/09/23 15:39	1
M2-6:2 FTS	133		25 - 150	04/24/23 08:34	05/09/23 15:39	1
M2-8:2 FTS	131		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C3 HFPO-DA	111		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C2 PFHxDA	4	*5-	25 - 150	04/24/23 08:34	05/09/23 15:39	1
d-N-MeFOSA-M	60		25 - 150	04/24/23 08:34	05/09/23 15:39	1
d7-N-MeFOSE-M	22	*5-	25 - 150	04/24/23 08:34	05/09/23 15:39	1
d9-N-EtFOSE-M	15	*5-	25 - 150	04/24/23 08:34	05/09/23 15:39	1
d-N-EtFOSA-M	44		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C2 10:2 FTS	73		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C-10:2 FTCA	53		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C-6:2 FTCA	74		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C-6:2 FTUCA	227	*5+	25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C-8:2 FTCA	61		25 - 150	04/24/23 08:34	05/09/23 15:39	1
13C-8:2 FTUCA	210	*5+	25 - 150	04/24/23 08:34	05/09/23 15:39	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	78		50 - 150	04/24/23 08:34	05/09/23 15:39	1
13C8 PFOS	85		50 - 150	04/24/23 08:34	05/09/23 15:39	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1061,1062 QC OTM-45 FH FBT

Lab Sample ID: 140-31434-13

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.00	1.30	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.180	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.210	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.620	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.650	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.0850	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.250	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.100	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.890	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.450	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.00	0.0950	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.0880	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.160	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		5.00	4.90	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0910	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		5.00	4.00	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.320	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.480	ng/Sample		04/24/23 09:01	05/03/23 17:04	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1061,1062 QC OTM-45 FH FBT

Lab Sample ID: 140-31434-13

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	0.430	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
8:2 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.420	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	3.39		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		5.00	4.70	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.00	0.0980	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.152	J	1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:04	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	94		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C2 PFDoA	90		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C2 PFHxA	91		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C2 PFHxDA	91		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C2 PFTeDA	81		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C2 PFUnA	90		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C3 HFPO-DA	90		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C3 PFBS	96		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C4 PFBA	93		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C4 PFHpA	98		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C4 PFOA	100		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C4 PFOS	94		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C5 PFNA	95		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C5 PFPeA	94		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C8 FOSA	97		25 - 150	04/24/23 09:01	05/03/23 17:04	1
18O2 PFHxS	96		25 - 150	04/24/23 09:01	05/03/23 17:04	1
d3-NMeFOSAA	100		25 - 150	04/24/23 09:01	05/03/23 17:04	1
d5-NEtFOSAA	116		25 - 150	04/24/23 09:01	05/03/23 17:04	1
d7-N-MeFOSE-M	89		25 - 150	04/24/23 09:01	05/03/23 17:04	1
d9-N-EtFOSE-M	89		25 - 150	04/24/23 09:01	05/03/23 17:04	1
d-N-EtFOSA-M	93		25 - 150	04/24/23 09:01	05/03/23 17:04	1
d-N-MeFOSA-M	94		25 - 150	04/24/23 09:01	05/03/23 17:04	1
M2-4:2 FTS	116		25 - 150	04/24/23 09:01	05/03/23 17:04	1
M2-6:2 FTS	155	*5+	25 - 150	04/24/23 09:01	05/03/23 17:04	1
M2-8:2 FTS	105		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C-10:2 FTCA	87		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C-6:2 FTCA	72		25 - 150	04/24/23 09:01	05/03/23 17:04	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1061,1062 QC OTM-45 FH FBT

Lab Sample ID: 140-31434-13

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-6:2 FTUCA	133		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C-8:2 FTCA	74		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C-8:2 FTUCA	138		25 - 150	04/24/23 09:01	05/03/23 17:04	1
13C2 10:2 FTS	130		25 - 150	04/24/23 09:01	05/03/23 17:04	1

Client Sample ID: W-1063,1064,1066 QC OTM-45 BH FBT

Lab Sample ID: 140-31434-14

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoropentanoic acid (PFPeA)	0.724	J	1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorooctanoic acid (PFOA)	1.58		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoroundecanoic acid (PFUnA)	ND	R	1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorododecanoic acid (PFDoA)	ND	R	1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorotridecanoic acid (PFTriA)	ND	*- R	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorotetradecanoic acid (PFTeA)	ND	R	1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorooctanesulfonic acid (PFOS)	0.263	J	1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorodecanesulfonic acid (PFDS)	ND	*-	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorononanesulfonic acid (PFNS)	ND	*-	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	R	1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	170	++	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 15:48	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1063,1064,1066 QC OTM-45 BH FBT

Lab Sample ID: 140-31434-14

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND	R	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND	R	1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1 R	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND	R	20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	R	1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	R	1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	R	1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
10:2 Fluorotelomer carboxylic acid	ND	R	1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	1.91		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 15:48	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 15:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	37		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C4 PFBA	109		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C5 PFPeA	135		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C2 PFHxA	139		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C4 PFHpA	122		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C4 PFOA	93		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C5 PFNA	53		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C2 PFDA	22	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C2 PFUnA	8	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C2 PFDoA	3	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C2 PFTeDA	0.03	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C3 PFBS	130		25 - 150	04/24/23 08:34	05/09/23 15:48	1
18O2 PFHxS	75		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C4 PFOS	13	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
d3-NMeFOSAA	16	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1063,1064,1066 QC OTM-45 BH FBT

Lab Sample ID: 140-31434-14

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	10	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
M2-4:2 FTS	175	*5+	25 - 150	04/24/23 08:34	05/09/23 15:48	1
M2-6:2 FTS	91		25 - 150	04/24/23 08:34	05/09/23 15:48	1
M2-8:2 FTS	23	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C3 HFPO-DA	124		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C2 PFHxDA	0.03	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
d-N-MeFOSA-M	1	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
d7-N-MeFOSE-M	0	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
d9-N-EtFOSE-M	0	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
d-N-EtFOSA-M	0.4	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C2 10:2 FTS	3	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C-10:2 FTCA	4	*5-	25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C-6:2 FTCA	58		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C-6:2 FTUCA	217	*5+	25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C-8:2 FTCA	31		25 - 150	04/24/23 08:34	05/09/23 15:48	1
13C-8:2 FTUCA	99		25 - 150	04/24/23 08:34	05/09/23 15:48	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	77		50 - 150	04/24/23 08:34	05/09/23 15:48	1
13C8 PFOS	80		50 - 150	04/24/23 08:34	05/09/23 15:48	1

Client Sample ID: W-1065 QC OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-15

CONDENSATE FBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.500	0.200	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoropentanoic acid (PFPeA)	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorohexanoic acid (PFHxA)	ND		0.500	0.190	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoroheptanoic acid (PFHpA)	ND		0.500	0.153	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorooctanoic acid (PFOA)	ND		0.500	0.0950	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorononanoic acid (PFNA)	ND		0.500	0.0525	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorodecanoic acid (PFDA)	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoroundecanoic acid (PFUnA)	ND		0.500	0.0750	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorododecanoic acid (PFDoA)	ND		0.500	0.0525	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorotridecanoic acid (PFTriA)	ND		0.500	0.0800	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.500	0.113	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.500	0.0450	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.500	0.0575	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		0.500	0.115	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.500	0.0825	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorooctanesulfonamide (FOSA)	ND		0.500	0.200	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.500	0.0600	ng/Sample		04/27/23 11:24	05/03/23 15:16	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1065 QC OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-15

CONDENSATE FBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanesulfonic acid (PFNS)	ND		0.500	0.0375	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.500	0.103	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.500	0.0750	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND		0.500	0.0575	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0.500	0.138	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.500	0.130	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.500	0.235	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.500	0.0700	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.500	0.140	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		0.500	0.108	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		0.500	0.185	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		0.500	0.128	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		0.500	0.103	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.500	0.0850	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.500	0.135	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		0.500	0.143	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.500	0.0800	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.500	0.145	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
10:2 Fluorotelomer carboxylic acid	ND		0.500	0.300	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
6:2 Fluorotelomer carboxylic acid	ND		0.500	0.300	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
7:3 Fluorotelomer carboxylic acid	ND		0.500	0.375	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
6:2 Fluorotelemer unsaturated acid	ND		0.500	0.0900	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
8:2 Fluorotelomer carboxylic acid	ND		0.500	0.325	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
8:2 Fluorotelemer unsaturated acid	ND		0.500	0.200	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
5:3 Fluorotelomer carboxylic acid	ND		0.500	0.300	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
3-Perfluoropropylpropanoic acid	ND		0.500	0.220	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.500	0.145	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.500	0.198	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		0.500	0.160	ng/Sample		04/27/23 11:24	05/03/23 15:16	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1065 QC OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-15

CONDENSATE FBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.500	0.128	ng/Sample		04/27/23 11:24	05/03/23 15:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	89		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C4 PFBA	82		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C5 PFPeA	84		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C2 PFHxA	84		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C4 PFHpA	91		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C4 PFOA	92		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C5 PFNA	95		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C2 PFDA	85		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C2 PFUnA	91		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C2 PFDoA	85		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C2 PFTeDA	64		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C3 PFBS	83		25 - 150				04/27/23 11:24	05/03/23 15:16	1
18O2 PFHxS	86		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C4 PFOS	88		25 - 150				04/27/23 11:24	05/03/23 15:16	1
d3-NMeFOSAA	94		25 - 150				04/27/23 11:24	05/03/23 15:16	1
d5-NEtFOSAA	104		25 - 150				04/27/23 11:24	05/03/23 15:16	1
M2-4:2 FTS	89		25 - 150				04/27/23 11:24	05/03/23 15:16	1
M2-6:2 FTS	100		25 - 150				04/27/23 11:24	05/03/23 15:16	1
M2-8:2 FTS	90		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C3 HFPO-DA	79		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C2 PFHxDA	61		25 - 150				04/27/23 11:24	05/03/23 15:16	1
d-N-MeFOSA-M	88		25 - 150				04/27/23 11:24	05/03/23 15:16	1
d7-N-MeFOSE-M	57		25 - 150				04/27/23 11:24	05/03/23 15:16	1
d9-N-EtFOSE-M	60		25 - 150				04/27/23 11:24	05/03/23 15:16	1
d-N-EtFOSA-M	85		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C2 10:2 FTS	100		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C-10:2 FTCA	91		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C-6:2 FTCA	80		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C-6:2 FTUCA	107		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C-8:2 FTCA	82		25 - 150				04/27/23 11:24	05/03/23 15:16	1
13C-8:2 FTUCA	114		25 - 150				04/27/23 11:24	05/03/23 15:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	0	S1-	50 - 150				04/27/23 11:24	05/03/23 15:16	1
13C8 PFOS	0	S1-	50 - 150				04/27/23 11:24	05/03/23 15:16	1

Client Sample ID: W-1067 QC OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-16

XAD-2 RESIN TUBE FBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	CI	10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 16:14	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1067 QC OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-16

XAD-2 RESIN TUBE FBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	++	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:14	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1067 QC OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-16

XAD-2 RESIN TUBE FBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 16:14	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 16:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	136		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C4 PFBA	97		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C5 PFPeA	132		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C2 PFHxA	133		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C4 PFHpA	122		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C4 PFOA	125		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C5 PFNA	132		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C2 PFDA	143		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C2 PFUnA	139		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C2 PFDoA	110		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C2 PFTeDA	66		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C3 PFBS	127		25 - 150	04/24/23 08:34	05/09/23 16:14	1
18O2 PFHxS	110		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C4 PFOS	123		25 - 150	04/24/23 08:34	05/09/23 16:14	1
d3-NMeFOSAA	145		25 - 150	04/24/23 08:34	05/09/23 16:14	1
d5-NEtFOSAA	146		25 - 150	04/24/23 08:34	05/09/23 16:14	1
M2-4:2 FTS	175	*5+	25 - 150	04/24/23 08:34	05/09/23 16:14	1
M2-6:2 FTS	160	*5+	25 - 150	04/24/23 08:34	05/09/23 16:14	1
M2-8:2 FTS	189	*5+	25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C3 HFPO-DA	115		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C2 PFHxDA	24	*5-	25 - 150	04/24/23 08:34	05/09/23 16:14	1
d-N-MeFOSA-M	98		25 - 150	04/24/23 08:34	05/09/23 16:14	1
d7-N-MeFOSE-M	37		25 - 150	04/24/23 08:34	05/09/23 16:14	1
d9-N-EtFOSE-M	26		25 - 150	04/24/23 08:34	05/09/23 16:14	1
d-N-EtFOSA-M	77		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C2 10:2 FTS	125		25 - 150	04/24/23 08:34	05/09/23 16:14	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1067 QC OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-16

XAD-2 RESIN TUBE FBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-10:2 FTCA	83		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C-6:2 FTCA	83		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C-6:2 FTUCA	245	*5+	25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C-8:2 FTCA	64		25 - 150	04/24/23 08:34	05/09/23 16:14	1
13C-8:2 FTUCA	244	*5+	25 - 150	04/24/23 08:34	05/09/23 16:14	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	77		50 - 150	04/24/23 08:34	05/09/23 16:14	1
13C8 PFOS	82		50 - 150	04/24/23 08:34	05/09/23 16:14	1

Client Sample ID: W-1068,1069 QC OTM-45 FH PBT

Lab Sample ID: 140-31434-17

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.00	1.30	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.180	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.210	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.620	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.650	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.0850	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.250	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.100	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.890	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.450	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.00	0.0950	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.0880	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
N-ethylperfluorooctane sulfonamide (NETFOSA)	ND		1.00	0.160	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:13	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1068,1069 QC OTM-45 FH PBT

Lab Sample ID: 140-31434-17

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		5.00	4.90	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0910	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		5.00	4.00	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.320	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.480	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	0.430	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
8:2 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.420	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		5.00	4.70	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.00	0.0980	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:13	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	96		25 - 150				04/24/23 09:01	05/03/23 17:13	1
13C2 PFDoA	94		25 - 150				04/24/23 09:01	05/03/23 17:13	1
13C2 PFHxA	95		25 - 150				04/24/23 09:01	05/03/23 17:13	1
13C2 PFHxDA	94		25 - 150				04/24/23 09:01	05/03/23 17:13	1
13C2 PFTeDA	91		25 - 150				04/24/23 09:01	05/03/23 17:13	1
13C2 PFUnA	94		25 - 150				04/24/23 09:01	05/03/23 17:13	1
13C3 HFPO-DA	90		25 - 150				04/24/23 09:01	05/03/23 17:13	1
13C3 PFBS	101		25 - 150				04/24/23 09:01	05/03/23 17:13	1
13C4 PFBA	97		25 - 150				04/24/23 09:01	05/03/23 17:13	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1068,1069 QC OTM-45 FH PBT

Lab Sample ID: 140-31434-17

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	101		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C4 PFOA	104		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C4 PFOS	98		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C5 PFNA	103		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C5 PFPeA	96		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C8 FOSA	103		25 - 150	04/24/23 09:01	05/03/23 17:13	1
18O2 PFHxS	100		25 - 150	04/24/23 09:01	05/03/23 17:13	1
d3-NMeFOSAA	105		25 - 150	04/24/23 09:01	05/03/23 17:13	1
d5-NEtFOSAA	119		25 - 150	04/24/23 09:01	05/03/23 17:13	1
d7-N-MeFOSE-M	94		25 - 150	04/24/23 09:01	05/03/23 17:13	1
d9-N-EtFOSE-M	99		25 - 150	04/24/23 09:01	05/03/23 17:13	1
d-N-EtFOSA-M	100		25 - 150	04/24/23 09:01	05/03/23 17:13	1
d-N-MeFOSA-M	99		25 - 150	04/24/23 09:01	05/03/23 17:13	1
M2-4:2 FTS	115		25 - 150	04/24/23 09:01	05/03/23 17:13	1
M2-6:2 FTS	165	*5+	25 - 150	04/24/23 09:01	05/03/23 17:13	1
M2-8:2 FTS	116		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C-10:2 FTCA	74		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C-6:2 FTCA	74		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C-6:2 FTUCA	139		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C-8:2 FTCA	81		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C-8:2 FTUCA	143		25 - 150	04/24/23 09:01	05/03/23 17:13	1
13C2 10:2 FTS	150		25 - 150	04/24/23 09:01	05/03/23 17:13	1

Client Sample ID: W-1070,1071,1073 QC OTM-45 BH PBT

Lab Sample ID: 140-31434-18

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluoropentanoic acid (PFPeA)	0.718	J	1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorooctanoic acid (PFOA)	1.40		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorotridecanoic acid (PFTriA)	ND	*-	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorotetradecanoic acid (PFTeA)	ND	R	1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorodecanesulfonic acid (PFDS)	ND	*-	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:23	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1070,1071,1073 QC OTM-45 BH PBT

Lab Sample ID: 140-31434-18

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorononanesulfonic acid (PFNS)	ND	*-	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	R	1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	R	1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*+	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND	R	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND	R	1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1 R	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND	R	20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	R	1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	R	1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	R	1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
10:2 Fluorotelomer carboxylic acid	1.29	I R	1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
6:2 Fluorotelomer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
8:2 Fluorotelomer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 16:23	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1070,1071,1073 QC OTM-45 BH PBT

Lab Sample ID: 140-31434-18

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 16:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	17	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C4 PFBA	104		25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C5 PFPeA	122		25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C2 PFHxA	125		25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C4 PFHpA	90		25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C4 PFOA	53		25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C5 PFNA	25		25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C2 PFDA	13	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C2 PFUnA	11	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C2 PFDoA	10	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C2 PFTeDA	1	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C3 PFBS	114		25 - 150				04/24/23 08:34	05/09/23 16:23	1
18O2 PFHxS	55		25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C4 PFOS	14	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
d3-NMeFOSAA	9	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
d5-NEtFOSAA	8	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
M2-4:2 FTS	125		25 - 150				04/24/23 08:34	05/09/23 16:23	1
M2-6:2 FTS	49		25 - 150				04/24/23 08:34	05/09/23 16:23	1
M2-8:2 FTS	12	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C3 HFPO-DA	106		25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C2 PFHxDA	0.03	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
d-N-MeFOSA-M	1	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
d7-N-MeFOSE-M	0	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
d9-N-EtFOSE-M	0	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
d-N-EtFOSA-M	0.7	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C2 10:2 FTS	9	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C-10:2 FTCA	5	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C-6:2 FTCA	42		25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C-6:2 FTUCA	153	*5+	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C-8:2 FTCA	10	*5-	25 - 150				04/24/23 08:34	05/09/23 16:23	1
13C-8:2 FTUCA	38		25 - 150				04/24/23 08:34	05/09/23 16:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	70		50 - 150				04/24/23 08:34	05/09/23 16:23	1
13C8 PFOS	90		50 - 150				04/24/23 08:34	05/09/23 16:23	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1072 QC OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-19

CONDENSATE PBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	CI	0.500	0.200	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoropentanoic acid (PFPeA)	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorohexanoic acid (PFHxA)	ND		0.500	0.190	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoroheptanoic acid (PFHpA)	ND		0.500	0.153	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorooctanoic acid (PFOA)	ND		0.500	0.0950	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorononanoic acid (PFNA)	ND		0.500	0.0525	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorodecanoic acid (PFDA)	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoroundecanoic acid (PFUnA)	ND		0.500	0.0750	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorododecanoic acid (PFDoA)	ND		0.500	0.0525	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorotridecanoic acid (PFTriA)	ND		0.500	0.0800	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.500	0.113	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.500	0.0450	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.500	0.0575	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		0.500	0.115	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.500	0.0825	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorooctanesulfonamide (FOSA)	ND		0.500	0.200	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.500	0.0600	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorononanesulfonic acid (PFNS)	ND		0.500	0.0375	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.500	0.103	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.500	0.0750	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.500	0.0575	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		0.500	0.138	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.500	0.130	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.500	0.235	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.500	0.0700	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.500	0.140	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		0.500	0.108	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		0.500	0.185	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		0.500	0.128	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		0.500	0.103	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.500	0.0850	ng/Sample		04/27/23 11:24	05/03/23 15:25	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1072 QC OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-19

CONDENSATE PBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.500	0.135	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		0.500	0.143	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.500	0.0800	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.500	0.145	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
10:2 Fluorotelomer carboxylic acid	ND		0.500	0.300	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
6:2 Fluorotelomer carboxylic acid	ND		0.500	0.300	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
7:3 Fluorotelomer carboxylic acid	ND		0.500	0.375	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
6:2 Fluorotelemer unsaturated acid	ND		0.500	0.0900	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
8:2 Fluorotelomer carboxylic acid	ND		0.500	0.325	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
8:2 Fluorotelemer unsaturated acid	ND		0.500	0.200	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
5:3 Fluorotelomer carboxylic acid	ND		0.500	0.300	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
3-Perfluoropropylpropanoic acid	ND		0.500	0.220	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.500	0.145	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.500	0.198	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		0.500	0.160	ng/Sample		04/27/23 11:24	05/03/23 15:25	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.500	0.128	ng/Sample		04/27/23 11:24	05/03/23 15:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	71		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C4 PFBA	84		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C5 PFPeA	84		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C2 PFHxA	86		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C4 PFHpA	89		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C4 PFOA	90		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C5 PFNA	89		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C2 PFDA	84		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C2 PFUnA	89		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C2 PFDoA	75		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C2 PFTeDA	56		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C3 PFBS	83		25 - 150	04/27/23 11:24	05/03/23 15:25	1
18O2 PFHxS	86		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C4 PFOS	87		25 - 150	04/27/23 11:24	05/03/23 15:25	1
d3-NMeFOSAA	88		25 - 150	04/27/23 11:24	05/03/23 15:25	1
d5-NEtFOSAA	101		25 - 150	04/27/23 11:24	05/03/23 15:25	1
M2-4:2 FTS	94		25 - 150	04/27/23 11:24	05/03/23 15:25	1
M2-6:2 FTS	93		25 - 150	04/27/23 11:24	05/03/23 15:25	1
M2-8:2 FTS	100		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C3 HFPO-DA	84		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C2 PFHxDA	69		25 - 150	04/27/23 11:24	05/03/23 15:25	1
d-N-MeFOSA-M	64		25 - 150	04/27/23 11:24	05/03/23 15:25	1
d7-N-MeFOSE-M	59		25 - 150	04/27/23 11:24	05/03/23 15:25	1
d9-N-EtFOSE-M	56		25 - 150	04/27/23 11:24	05/03/23 15:25	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1072 QC OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-19

CONDENSATE PBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d-N-EtFOSA-M	64		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C2 10:2 FTS	98		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C-10:2 FTCA	81		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C-6:2 FTCA	80		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C-6:2 FTUCA	106		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C-8:2 FTCA	82		25 - 150	04/27/23 11:24	05/03/23 15:25	1
13C-8:2 FTUCA	108		25 - 150	04/27/23 11:24	05/03/23 15:25	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0	S1-	50 - 150	04/27/23 11:24	05/03/23 15:25	1
13C8 PFOS	0	S1-	50 - 150	04/27/23 11:24	05/03/23 15:25	1

Client Sample ID: W-1074 QC OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-20

XAD-2 RESIN TUBE PBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	CI	10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorooctanoic acid (PFOA)	0.671	J	1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorotridecanoic acid (PFTriA)	ND	*-	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorodecanesulfonic acid (PFDS)	ND	*-	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorononanesulfonic acid (PFNS)	ND	*-	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 16:32	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1074 QC OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-20

XAD-2 RESIN TUBE PBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	++	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 16:32	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 16:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	134		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C4 PFBA	93		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C5 PFPeA	127		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C2 PFHxA	128		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C4 PFHpA	121		25 - 150	04/24/23 08:34	05/09/23 16:32	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1074 QC OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-20

XAD-2 RESIN TUBE PBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	124		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C5 PFNA	128		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C2 PFDA	133		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C2 PFUnA	127		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C2 PFDoA	113		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C2 PFTeDA	89		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C3 PFBS	120		25 - 150	04/24/23 08:34	05/09/23 16:32	1
18O2 PFHxS	107		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C4 PFOS	121		25 - 150	04/24/23 08:34	05/09/23 16:32	1
d3-NMeFOSAA	153	*5+	25 - 150	04/24/23 08:34	05/09/23 16:32	1
d5-NEtFOSAA	152	*5+	25 - 150	04/24/23 08:34	05/09/23 16:32	1
M2-4:2 FTS	188	*5+	25 - 150	04/24/23 08:34	05/09/23 16:32	1
M2-6:2 FTS	149		25 - 150	04/24/23 08:34	05/09/23 16:32	1
M2-8:2 FTS	194	*5+	25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C3 HFPO-DA	115		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C2 PFHxDA	35		25 - 150	04/24/23 08:34	05/09/23 16:32	1
d-N-MeFOSA-M	105		25 - 150	04/24/23 08:34	05/09/23 16:32	1
d7-N-MeFOSE-M	56		25 - 150	04/24/23 08:34	05/09/23 16:32	1
d9-N-EtFOSE-M	42		25 - 150	04/24/23 08:34	05/09/23 16:32	1
d-N-EtFOSA-M	98		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C2 10:2 FTS	131		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C-10:2 FTCA	84		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C-6:2 FTCA	80		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C-6:2 FTUCA	229	*5+	25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C-8:2 FTCA	85		25 - 150	04/24/23 08:34	05/09/23 16:32	1
13C-8:2 FTUCA	233	*5+	25 - 150	04/24/23 08:34	05/09/23 16:32	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	76		50 - 150	04/24/23 08:34	05/09/23 16:32	1
13C8 PFOS	85		50 - 150	04/24/23 08:34	05/09/23 16:32	1

Client Sample ID: W-1075 QC OTM-45 XAD-2 RESIN TUBE RB

Lab Sample ID: 140-31434-21

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	CI	10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorooctanoic acid (PFOA)	0.719	J	1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:50	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1075 QC OTM-45 XAD-2 RESIN TUBE RB

Lab Sample ID: 140-31434-21

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	++	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 16:50	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1075 QC OTM-45 XAD-2 RESIN TUBE RB

Lab Sample ID: 140-31434-21

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 16:50	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 16:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	124		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C4 PFBA	94		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C5 PFPeA	123		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C2 PFHxA	126		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C4 PFHpA	118		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C4 PFOA	120		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C5 PFNA	130		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C2 PFDA	136		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C2 PFUnA	120		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C2 PFDoA	113		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C2 PFTeDA	69		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C3 PFBS	116		25 - 150	04/24/23 08:34	05/09/23 16:50	1
18O2 PFHxS	102		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C4 PFOS	120		25 - 150	04/24/23 08:34	05/09/23 16:50	1
d3-NMeFOSAA	150		25 - 150	04/24/23 08:34	05/09/23 16:50	1
d5-NEtFOSAA	137		25 - 150	04/24/23 08:34	05/09/23 16:50	1
M2-4:2 FTS	190	*5+	25 - 150	04/24/23 08:34	05/09/23 16:50	1
M2-6:2 FTS	150		25 - 150	04/24/23 08:34	05/09/23 16:50	1
M2-8:2 FTS	174	*5+	25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C3 HFPO-DA	114		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C2 PFHxDA	26		25 - 150	04/24/23 08:34	05/09/23 16:50	1
d-N-MeFOSA-M	98		25 - 150	04/24/23 08:34	05/09/23 16:50	1
d7-N-MeFOSE-M	43		25 - 150	04/24/23 08:34	05/09/23 16:50	1
d9-N-EtFOSE-M	29		25 - 150	04/24/23 08:34	05/09/23 16:50	1
d-N-EtFOSA-M	78		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C2 10:2 FTS	116		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C-10:2 FTCA	79		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C-6:2 FTCA	76		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C-6:2 FTUCA	230	*5+	25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C-8:2 FTCA	85		25 - 150	04/24/23 08:34	05/09/23 16:50	1
13C-8:2 FTUCA	217	*5+	25 - 150	04/24/23 08:34	05/09/23 16:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	75		50 - 150	04/24/23 08:34	05/09/23 16:50	1
13C8 PFOS	81		50 - 150	04/24/23 08:34	05/09/23 16:50	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1076 QC OTM-45 MEOH/5% NH4OH RB

Lab Sample ID: 140-31434-22

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	+	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:58	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1076 QC OTM-45 MEOH/5% NH4OH RB

Lab Sample ID: 140-31434-22

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 16:58	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 16:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	87		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C4 PFBA	84		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C5 PFPeA	89		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C2 PFHxA	87		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C4 PFHpA	88		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C4 PFOA	95		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C5 PFNA	96		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C2 PFDA	96		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C2 PFUnA	86		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C2 PFDoA	102		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C2 PFTeDA	105		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C3 PFBS	87		25 - 150	04/24/23 08:34	05/09/23 16:58	1
18O2 PFHxS	86		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C4 PFOS	85		25 - 150	04/24/23 08:34	05/09/23 16:58	1
d3-NMeFOSAA	101		25 - 150	04/24/23 08:34	05/09/23 16:58	1
d5-NEtFOSAA	109		25 - 150	04/24/23 08:34	05/09/23 16:58	1
M2-4:2 FTS	91		25 - 150	04/24/23 08:34	05/09/23 16:58	1
M2-6:2 FTS	122		25 - 150	04/24/23 08:34	05/09/23 16:58	1
M2-8:2 FTS	101		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C3 HFPO-DA	82		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C2 PFHxDA	88		25 - 150	04/24/23 08:34	05/09/23 16:58	1
d-N-MeFOSA-M	80		25 - 150	04/24/23 08:34	05/09/23 16:58	1
d7-N-MeFOSE-M	86		25 - 150	04/24/23 08:34	05/09/23 16:58	1
d9-N-EtFOSE-M	81		25 - 150	04/24/23 08:34	05/09/23 16:58	1
d-N-EtFOSA-M	77		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C2 10:2 FTS	98		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C-10:2 FTCA	89		25 - 150	04/24/23 08:34	05/09/23 16:58	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1076 QC OTM-45 MEOH/5% NH4OH RB

Lab Sample ID: 140-31434-22

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-6:2 FTCA	66		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C-6:2 FTUCA	130		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C-8:2 FTCA	67		25 - 150	04/24/23 08:34	05/09/23 16:58	1
13C-8:2 FTUCA	122		25 - 150	04/24/23 08:34	05/09/23 16:58	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.008	S1-	50 - 150	04/24/23 08:34	05/09/23 16:58	1
13C8 PFOS	0	S1-	50 - 150	04/24/23 08:34	05/09/23 16:58	1

Client Sample ID: W-1077 QC OTM-45 FILTER RB

Lab Sample ID: 140-31434-23

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.00	1.30	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.180	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.210	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.620	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.650	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.0850	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.250	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.100	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.890	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.450	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.00	0.0950	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.0880	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.160	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		5.00	4.90	ng/Sample		04/24/23 09:01	05/03/23 17:22	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1077 QC OTM-45 FILTER RB

Lab Sample ID: 140-31434-23

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0910	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		5.00	4.00	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.320	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.480	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	0.430	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
8:2 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.420	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		5.00	4.70	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.00	0.0980	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	91		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C2 PFDoA	92		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C2 PFHxA	87		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C2 PFHxDA	91		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C2 PFTeDA	91		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C2 PFUnA	94		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C3 HFPO-DA	87		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C3 PFBS	98		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C4 PFBA	92		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C4 PFHpA	97		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C4 PFOA	98		25 - 150				04/24/23 09:01	05/03/23 17:22	1
13C4 PFOS	96		25 - 150				04/24/23 09:01	05/03/23 17:22	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1077 QC OTM-45 FILTER RB

Lab Sample ID: 140-31434-23

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	95		25 - 150	04/24/23 09:01	05/03/23 17:22	1
13C5 PFPeA	91		25 - 150	04/24/23 09:01	05/03/23 17:22	1
13C8 FOSA	97		25 - 150	04/24/23 09:01	05/03/23 17:22	1
18O2 PFHxS	100		25 - 150	04/24/23 09:01	05/03/23 17:22	1
d3-NMeFOSAA	108		25 - 150	04/24/23 09:01	05/03/23 17:22	1
d5-NEtFOSAA	120		25 - 150	04/24/23 09:01	05/03/23 17:22	1
d7-N-MeFOSE-M	88		25 - 150	04/24/23 09:01	05/03/23 17:22	1
d9-N-EtFOSE-M	87		25 - 150	04/24/23 09:01	05/03/23 17:22	1
d-N-EtFOSA-M	92		25 - 150	04/24/23 09:01	05/03/23 17:22	1
d-N-MeFOSA-M	93		25 - 150	04/24/23 09:01	05/03/23 17:22	1
M2-4:2 FTS	106		25 - 150	04/24/23 09:01	05/03/23 17:22	1
M2-6:2 FTS	147		25 - 150	04/24/23 09:01	05/03/23 17:22	1
M2-8:2 FTS	112		25 - 150	04/24/23 09:01	05/03/23 17:22	1
13C-10:2 FTCA	84		25 - 150	04/24/23 09:01	05/03/23 17:22	1
13C-6:2 FTCA	74		25 - 150	04/24/23 09:01	05/03/23 17:22	1
13C-6:2 FTUCA	132		25 - 150	04/24/23 09:01	05/03/23 17:22	1
13C-8:2 FTCA	66		25 - 150	04/24/23 09:01	05/03/23 17:22	1
13C-8:2 FTUCA	130		25 - 150	04/24/23 09:01	05/03/23 17:22	1
13C2 10:2 FTS	135		25 - 150	04/24/23 09:01	05/03/23 17:22	1

Client Sample ID: W-1078 QC OTM-45 DI WATER RB

Lab Sample ID: 140-31434-24

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.500	0.200	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoropentanoic acid (PFPeA)	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorohexanoic acid (PFHxA)	ND		0.500	0.190	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoroheptanoic acid (PFHpA)	ND		0.500	0.153	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorooctanoic acid (PFOA)	ND		0.500	0.0950	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorononanoic acid (PFNA)	ND		0.500	0.0525	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorodecanoic acid (PFDA)	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoroundecanoic acid (PFUnA)	ND		0.500	0.0750	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorododecanoic acid (PFDoA)	ND		0.500	0.0525	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorotridecanoic acid (PFTriA)	ND		0.500	0.0800	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.500	0.113	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.500	0.0450	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.500	0.0575	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		0.500	0.115	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.500	0.0825	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorooctanesulfonamide (FOSA)	ND		0.500	0.200	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.500	0.0600	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorononanesulfonic acid (PFNS)	ND		0.500	0.0375	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.500	0.103	ng/Sample		04/27/23 11:24	05/03/23 15:34	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1078 QC OTM-45 DI WATER RB

Lab Sample ID: 140-31434-24

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	ND		0.500	0.0750	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND		0.500	0.0575	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0.500	0.138	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.500	0.130	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.500	0.235	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.500	0.0650	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.500	0.0700	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.500	0.140	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		0.500	0.108	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		0.500	0.185	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		0.500	0.128	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		0.500	0.103	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.500	0.0850	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
N-ethylperfluorooctane sulfonamide (NETFOSA)	ND		0.500	0.135	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		0.500	0.143	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.500	0.0800	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.500	0.145	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
10:2 Fluorotelomer carboxylic acid	ND		0.500	0.300	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
6:2 Fluorotelomer carboxylic acid	ND		0.500	0.300	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
7:3 Fluorotelomer carboxylic acid	ND		0.500	0.375	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
6:2 Fluorotelemer unsaturated acid	ND		0.500	0.0900	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
8:2 Fluorotelomer carboxylic acid	ND		0.500	0.325	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
8:2 Fluorotelemer unsaturated acid	ND		0.500	0.200	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
5:3 Fluorotelomer carboxylic acid	ND		0.500	0.300	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
3-Perfluoropropylpropanoic acid	ND		0.500	0.220	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.500	0.145	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.500	0.198	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		0.500	0.160	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.500	0.128	ng/Sample		04/27/23 11:24	05/03/23 15:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C8 FOSA	72		25 - 150				04/27/23 11:24	05/03/23 15:34	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1078 QC OTM-45 DI WATER RB

Lab Sample ID: 140-31434-24

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	85		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C5 PFPeA	87		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C2 PFHxA	81		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C4 PFHpA	90		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C4 PFOA	94		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C5 PFNA	87		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C2 PFDA	85		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C2 PFUnA	88		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C2 PFDoA	84		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C2 PFTeDA	64		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C3 PFBS	86		25 - 150	04/27/23 11:24	05/03/23 15:34	1
18O2 PFHxS	87		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C4 PFOS	89		25 - 150	04/27/23 11:24	05/03/23 15:34	1
d3-NMeFOSAA	96		25 - 150	04/27/23 11:24	05/03/23 15:34	1
d5-NEtFOSAA	94		25 - 150	04/27/23 11:24	05/03/23 15:34	1
M2-4:2 FTS	96		25 - 150	04/27/23 11:24	05/03/23 15:34	1
M2-6:2 FTS	100		25 - 150	04/27/23 11:24	05/03/23 15:34	1
M2-8:2 FTS	105		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C3 HFPO-DA	86		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C2 PFHxDA	74		25 - 150	04/27/23 11:24	05/03/23 15:34	1
d-N-MeFOSA-M	61		25 - 150	04/27/23 11:24	05/03/23 15:34	1
d7-N-MeFOSE-M	58		25 - 150	04/27/23 11:24	05/03/23 15:34	1
d9-N-EtFOSE-M	57		25 - 150	04/27/23 11:24	05/03/23 15:34	1
d-N-EtFOSA-M	58		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C2 10:2 FTS	85		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C-10:2 FTCA	92		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C-6:2 FTCA	77		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C-6:2 FTUCA	113		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C-8:2 FTCA	88		25 - 150	04/27/23 11:24	05/03/23 15:34	1
13C-8:2 FTUCA	110		25 - 150	04/27/23 11:24	05/03/23 15:34	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0	S1-	50 - 150	04/27/23 11:24	05/03/23 15:34	1
13C8 PFOS	0	S1-	50 - 150	04/27/23 11:24	05/03/23 15:34	1

Client Sample ID: A-1550 OTM-45 MEDIA CHECK XAD

Lab Sample ID: 140-31434-25

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 17:07	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: A-1550 OTM-45 MEDIA CHECK XAD

Lab Sample ID: 140-31434-25

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorododecanoic acid (PFDoA)	ND	R	1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorotridecanoic acid (PFTriA)	ND	*- R	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorotetradecanoic acid (PFTeA)	ND	R	1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorodecanesulfonic acid (PFDS)	ND	*-	1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorooctanesulfonamide (FOSA)	ND	R	1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorononanesulfonic acid (PFNS)	ND	*-	1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	R	1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	R	1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*-	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	**	2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND	R	1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND	R	1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	*- *1 R	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	31.9	R	20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	R	1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	R	1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	R	1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*- *1	1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
10:2 Fluorotelomer carboxylic acid	ND	R	1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 17:07	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: A-1550 OTM-45 MEDIA CHECK XAD

Lab Sample ID: 140-31434-25

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
8:2 Fluorotelomer carboxylic acid	ND	*1	1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND	*-	1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 17:07	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 17:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	5	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C4 PFBA	101		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C5 PFPeA	114		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C2 PFHxA	106		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C4 PFHpA	82		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C4 PFOA	54		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C5 PFNA	29		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C2 PFDA	17	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C2 PFUnA	11	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C2 PFDoA	8	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C2 PFTeDA	4	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C3 PFBS	109		25 - 150	04/24/23 08:34	05/09/23 17:07	1
18O2 PFHxS	64		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C4 PFOS	20	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
d3-NMeFOSAA	10	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
d5-NEtFOSAA	7	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
M2-4:2 FTS	114		25 - 150	04/24/23 08:34	05/09/23 17:07	1
M2-6:2 FTS	60		25 - 150	04/24/23 08:34	05/09/23 17:07	1
M2-8:2 FTS	18	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C3 HFPO-DA	91		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C2 PFHxDA	0.3	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
d-N-MeFOSA-M	1	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
d7-N-MeFOSE-M	2	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
d9-N-EtFOSE-M	2	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
d-N-EtFOSA-M	1	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C2 10:2 FTS	8	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C-10:2 FTCA	5	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C-6:2 FTCA	43		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C-6:2 FTUCA	121		25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C-8:2 FTCA	11	*5-	25 - 150	04/24/23 08:34	05/09/23 17:07	1
13C-8:2 FTUCA	41		25 - 150	04/24/23 08:34	05/09/23 17:07	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: A-1551 OTM-45 MEDIA CHECK FILTER

Lab Sample ID: 140-31434-26

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.00	1.30	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.180	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.210	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.620	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.650	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.0850	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.250	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.100	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.890	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.450	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.00	0.0950	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.0880	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.160	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		5.00	4.90	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0910	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		5.00	4.00	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.320	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.480	ng/Sample		04/24/23 09:01	05/03/23 17:31	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: A-1551 OTM-45 MEDIA CHECK FILTER

Lab Sample ID: 140-31434-26

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	0.430	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
8:2 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.420	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		5.00	4.70	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.00	0.0980	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 17:31	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 17:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	91		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C2 PFDoA	82		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C2 PFHxA	89		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C2 PFHxDA	85		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C2 PFTeDA	84		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C2 PFUnA	88		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C3 HFPO-DA	85		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C3 PFBS	94		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C4 PFBA	92		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C4 PFHpA	96		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C4 PFOA	97		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C4 PFOS	92		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C5 PFNA	92		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C5 PFPeA	91		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C8 FOSA	93		25 - 150	04/24/23 09:01	05/03/23 17:31	1
18O2 PFHxS	96		25 - 150	04/24/23 09:01	05/03/23 17:31	1
d3-NMeFOSAA	101		25 - 150	04/24/23 09:01	05/03/23 17:31	1
d5-NEtFOSAA	115		25 - 150	04/24/23 09:01	05/03/23 17:31	1
d7-N-MeFOSE-M	89		25 - 150	04/24/23 09:01	05/03/23 17:31	1
d9-N-EtFOSE-M	82		25 - 150	04/24/23 09:01	05/03/23 17:31	1
d-N-EtFOSA-M	93		25 - 150	04/24/23 09:01	05/03/23 17:31	1
d-N-MeFOSA-M	88		25 - 150	04/24/23 09:01	05/03/23 17:31	1
M2-4:2 FTS	109		25 - 150	04/24/23 09:01	05/03/23 17:31	1
M2-6:2 FTS	148		25 - 150	04/24/23 09:01	05/03/23 17:31	1
M2-8:2 FTS	106		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C-10:2 FTCA	80		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C-6:2 FTCA	72		25 - 150	04/24/23 09:01	05/03/23 17:31	1

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Client Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: A-1551 OTM-45 MEDIA CHECK FILTER

Lab Sample ID: 140-31434-26

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Sample Container: Air Train

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-6:2 FTUCA	132		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C-8:2 FTCA	78		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C-8:2 FTUCA	129		25 - 150	04/24/23 09:01	05/03/23 17:31	1
13C2 10:2 FTS	128		25 - 150	04/24/23 09:01	05/03/23 17:31	1

Default Detection Limits

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
10:2 Fluorotelomer carboxylic acid	1.00	0.420	ng/Sample
10:2 Fluorotelomer carboxylic acid	1.00	0.520	ng/Sample
10:2 Fluorotelomer carboxylic acid	2.00	1.20	ng/Sample
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	1.00	0.200	ng/Sample
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	1.00	0.180	ng/Sample
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	2.00	0.280	ng/Sample
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.00	0.140	ng/Sample
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.00	0.160	ng/Sample
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	0.520	ng/Sample
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	1.00	0.320	ng/Sample
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	1.00	0.170	ng/Sample
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	2.00	0.430	ng/Sample
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.00	0.0910	ng/Sample
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.00	0.0640	ng/Sample
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	0.230	ng/Sample
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	5.00	4.00	ng/Sample
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	10.0	8.70	ng/Sample
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	0.550	ng/Sample
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	1.00	0.120	ng/Sample
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	1.00	0.370	ng/Sample
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	2.00	0.740	ng/Sample
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	5.00	4.90	ng/Sample
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	20.0	19.8	ng/Sample
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	2.00	0.410	ng/Sample
3-Perfluoropropylpropanoic acid	1.00	0.290	ng/Sample
3-Perfluoropropylpropanoic acid	1.00	0.310	ng/Sample
3-Perfluoropropylpropanoic acid	2.00	0.880	ng/Sample
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.00	0.140	ng/Sample
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	1.10	ng/Sample
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	0.560	ng/Sample
5:3 Fluorotelomer carboxylic acid	1.00	0.480	ng/Sample
5:3 Fluorotelomer carboxylic acid	1.00	0.700	ng/Sample
5:3 Fluorotelomer carboxylic acid	2.00	1.20	ng/Sample
6:2 Fluorotelemer unsaturated acid	1.00	0.140	ng/Sample
6:2 Fluorotelemer unsaturated acid	1.00	0.200	ng/Sample
6:2 Fluorotelemer unsaturated acid	2.00	0.360	ng/Sample
6:2 Fluorotelomer carboxylic acid	1.00	0.430	ng/Sample
6:2 Fluorotelomer carboxylic acid	1.00	1.00	ng/Sample
6:2 Fluorotelomer carboxylic acid	2.00	1.20	ng/Sample
7:3 Fluorotelomer carboxylic acid	1.00	0.350	ng/Sample
7:3 Fluorotelomer carboxylic acid	1.00	0.560	ng/Sample
7:3 Fluorotelomer carboxylic acid	2.00	1.50	ng/Sample
8:2 Fluorotelemer unsaturated acid	1.00	0.220	ng/Sample
8:2 Fluorotelemer unsaturated acid	1.00	0.200	ng/Sample
8:2 Fluorotelemer unsaturated acid	2.00	0.800	ng/Sample
8:2 Fluorotelomer carboxylic acid	1.00	0.350	ng/Sample
8:2 Fluorotelomer carboxylic acid	1.00	0.380	ng/Sample
8:2 Fluorotelomer carboxylic acid	2.00	1.30	ng/Sample
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.00	0.0980	ng/Sample
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.00	0.180	ng/Sample
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	2.00	0.260	ng/Sample
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	5.00	4.70	ng/Sample

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Default Detection Limits

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Prep: None

Analyte	RL	MDL	Units
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	20.0	11.0	ng/Sample
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	0.940	ng/Sample
N-ethylperfluorooctane sulfonamide (NEtFOSA)	1.00	0.160	ng/Sample
N-ethylperfluorooctane sulfonamide (NEtFOSA)	1.00	0.660	ng/Sample
N-ethylperfluorooctane sulfonamide (NEtFOSA)	2.00	0.540	ng/Sample
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.00	0.140	ng/Sample
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.00	0.190	ng/Sample
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	0.300	ng/Sample
N-methylperfluorooctane sulfonamide (NMeFOSA)	1.00	0.150	ng/Sample
N-methylperfluorooctane sulfonamide (NMeFOSA)	1.00	0.770	ng/Sample
N-methylperfluorooctane sulfonamide (NMeFOSA)	2.00	0.340	ng/Sample
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.00	0.120	ng/Sample
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	0.410	ng/Sample
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.00	0.150	ng/Sample
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.00	0.160	ng/Sample
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	0.580	ng/Sample
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	1.00	0.140	ng/Sample
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	1.00	0.100	ng/Sample
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	2.00	0.510	ng/Sample
Perfluoro-3-methoxypropanoic acid (PFMPA)	1.00	0.150	ng/Sample
Perfluoro-3-methoxypropanoic acid (PFMPA)	1.00	0.120	ng/Sample
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	0.580	ng/Sample
Perfluoro-4-ethylcyclohexanesulfonic acid	1.00	0.220	ng/Sample
Perfluoro-4-ethylcyclohexanesulfonic acid	1.00	0.140	ng/Sample
Perfluoro-4-ethylcyclohexanesulfonic acid	2.00	0.640	ng/Sample
Perfluoro-4-methoxybutanoic acid (PFMBA)	1.00	0.200	ng/Sample
Perfluoro-4-methoxybutanoic acid (PFMBA)	1.00	0.130	ng/Sample
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	0.790	ng/Sample
Perfluorobutanesulfonic acid (PFBS)	1.00	0.890	ng/Sample
Perfluorobutanesulfonic acid (PFBS)	1.00	0.520	ng/Sample
Perfluorobutanesulfonic acid (PFBS)	2.00	0.180	ng/Sample
Perfluorobutanoic acid (PFBA)	2.00	1.30	ng/Sample
Perfluorobutanoic acid (PFBA)	10.0	9.40	ng/Sample
Perfluorobutanoic acid (PFBA)	2.00	0.800	ng/Sample
Perfluorodecanesulfonic acid (PFDS)	1.00	0.110	ng/Sample
Perfluorodecanesulfonic acid (PFDS)	1.00	0.200	ng/Sample
Perfluorodecanesulfonic acid (PFDS)	2.00	0.330	ng/Sample
Perfluorodecanoic acid (PFDA)	1.00	0.250	ng/Sample
Perfluorodecanoic acid (PFDA)	1.00	0.210	ng/Sample
Perfluorodecanoic acid (PFDA)	2.00	0.260	ng/Sample
Perfluorododecanesulfonic acid (PFDoS)	1.00	0.0950	ng/Sample
Perfluorododecanesulfonic acid (PFDoS)	1.00	0.180	ng/Sample
Perfluorododecanesulfonic acid (PFDoS)	2.00	0.320	ng/Sample
Perfluorododecanoic acid (PFDoA)	1.00	0.100	ng/Sample
Perfluorododecanoic acid (PFDoA)	1.00	0.120	ng/Sample
Perfluorododecanoic acid (PFDoA)	2.00	0.210	ng/Sample
Perfluoroheptanesulfonic acid (PFHpS)	1.00	0.110	ng/Sample
Perfluoroheptanesulfonic acid (PFHpS)	1.00	0.200	ng/Sample

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Default Detection Limits

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Prep: None

Analyte	RL	MDL	Units
Perfluoroheptanesulfonic acid (PFHpS)	2.00	0.460	ng/Sample
Perfluoroheptanoic acid (PFHpA)	1.00	0.620	ng/Sample
Perfluoroheptanoic acid (PFHpA)	3.00	2.60	ng/Sample
Perfluoroheptanoic acid (PFHpA)	2.00	0.610	ng/Sample
Perfluorohexanesulfonic acid (PFHxS)	1.00	0.110	ng/Sample
Perfluorohexanesulfonic acid (PFHxS)	1.00	0.260	ng/Sample
Perfluorohexanesulfonic acid (PFHxS)	2.00	0.230	ng/Sample
Perfluorohexanoic acid (PFHxA)	1.00	0.210	ng/Sample
Perfluorohexanoic acid (PFHxA)	1.00	0.520	ng/Sample
Perfluorohexanoic acid (PFHxA)	2.00	0.760	ng/Sample
Perfluoro-n-hexadecanoic acid (PFHxDA)	1.00	0.290	ng/Sample
Perfluoro-n-hexadecanoic acid (PFHxDA)	2.00	0.570	ng/Sample
Perfluoro-n-octadecanoic acid (PFODA)	1.00	0.220	ng/Sample
Perfluoro-n-octadecanoic acid (PFODA)	1.00	0.640	ng/Sample
Perfluoro-n-octadecanoic acid (PFODA)	2.00	0.510	ng/Sample
Perfluorononanesulfonic acid (PFNS)	1.00	0.120	ng/Sample
Perfluorononanesulfonic acid (PFNS)	1.00	0.160	ng/Sample
Perfluorononanesulfonic acid (PFNS)	2.00	0.150	ng/Sample
Perfluorononanoic acid (PFNA)	1.00	0.0850	ng/Sample
Perfluorononanoic acid (PFNA)	1.00	0.890	ng/Sample
Perfluorononanoic acid (PFNA)	2.00	0.210	ng/Sample
Perfluorooctanesulfonamide (FOSA)	1.00	0.0880	ng/Sample
Perfluorooctanesulfonamide (FOSA)	1.00	0.230	ng/Sample
Perfluorooctanesulfonamide (FOSA)	2.00	0.800	ng/Sample
Perfluorooctanesulfonic acid (PFOS)	1.00	0.450	ng/Sample
Perfluorooctanesulfonic acid (PFOS)	1.00	0.150	ng/Sample
Perfluorooctanesulfonic acid (PFOS)	2.00	0.260	ng/Sample
Perfluorooctanoic acid (PFOA)	1.00	0.650	ng/Sample
Perfluorooctanoic acid (PFOA)	1.00	0.660	ng/Sample
Perfluorooctanoic acid (PFOA)	2.00	0.380	ng/Sample
Perfluoropentanesulfonic acid (PFPeS)	1.00	0.120	ng/Sample
Perfluoropentanesulfonic acid (PFPeS)	1.00	0.210	ng/Sample
Perfluoropentanesulfonic acid (PFPeS)	2.00	0.240	ng/Sample
Perfluoropentanoic acid (PFPeA)	1.00	0.180	ng/Sample
Perfluoropentanoic acid (PFPeA)	1.00	0.450	ng/Sample
Perfluoropentanoic acid (PFPeA)	2.00	0.260	ng/Sample
Perfluorotetradecanoic acid (PFTeA)	1.00	0.170	ng/Sample
Perfluorotetradecanoic acid (PFTeA)	1.00	0.230	ng/Sample
Perfluorotetradecanoic acid (PFTeA)	2.00	0.450	ng/Sample
Perfluorotridecanoic acid (PFTriA)	1.00	0.140	ng/Sample
Perfluorotridecanoic acid (PFTriA)	1.00	0.170	ng/Sample
Perfluorotridecanoic acid (PFTriA)	2.00	0.320	ng/Sample
Perfluoroundecanoic acid (PFUnA)	1.00	0.170	ng/Sample
Perfluoroundecanoic acid (PFUnA)	1.00	0.270	ng/Sample
Perfluoroundecanoic acid (PFUnA)	2.00	0.300	ng/Sample

Surrogate Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		C8PFOA (50-150)	C8PFOS (50-150)
140-31434-2	W-1042,1043,1045 R1 OTM-45	13 S1-	3 S1-
140-31434-3	W-1044 R1 OTM-45 IMPINGER 1,2&3 CONDENSATE	0.002 S1-	0 S1-
140-31434-4	W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	70	79
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	89	26 S1-
140-31434-7	W-1051 R2 OTM-45 IMPINGER 1,2&3 CONDENSATE	0 S1-	0 S1-
140-31434-8	W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	78	80
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	7 S1-	0.5 S1-
140-31434-11	W-1058 R3 OTM-45 IMPINGER 1,2&3 CONDENSATE	0 S1-	0 S1-
140-31434-12	W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	78	85
140-31434-14	W-1063,1064,1066 QC OTM-45 BH FBT	77	80
140-31434-15	W-1065 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE FBT	0 S1-	0 S1-
140-31434-16	W-1067 QC OTM-45 BREAKTHROUGH XAD-2 RESI TUBE FBT	77	82
140-31434-18	W-1070,1071,1073 QC OTM-45 BH PBT	70	90
140-31434-19	W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE PBT	0 S1-	0 S1-
140-31434-20	W-1074 QC OTM-45 BREAKTHROUGH XAD-2 RESI TUBE PBT	76	85
140-31434-21	W-1075 QC OTM-45 XAD-2 RESIN TUBE RB	75	81
140-31434-22	W-1076 QC OTM-45 MEOH/5% NH4OH RB	0.008 S1-	0 S1-
140-31434-24	W-1078 QC OTM-45 DI WATER RB	0 S1-	0 S1-

Surrogate Legend

C8PFOA = 13C8 PFOA

C8PFOS = 13C8 PFOS

Isotope Dilution Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDA (25-150)	PFDoA (25-150)	PFHxA (25-150)	PFHxDA (25-150)	PFTDA (25-150)	PFUnA (25-150)	HFPODA (25-150)	C3PFBS (25-150)
140-31434-1	W-1040,1041 R1 OTM-45 FH	85	91	85	94	84	88	82	91
140-31434-2	W-1042,1043,1045 R1 OTM-45 BH	98	101	100	93	104	102	94	98
140-31434-3	W-1044 R1 OTM-45 IMPINGER 1,2&3 CONDENSATE	82	64	83	72	61	80	84	81
140-31434-4	W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	154 *5+	120	139	32	99	150	114	121
140-31434-5	W-1047,1048 R2 OTM-45 FH	86	86	84	81	81	85	85	88
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	96	101	100	93	98	106	96	95
140-31434-7	W-1051 R2 OTM-45 IMPINGER 1,2&3 CONDENSATE	87	71	86	71	55	87	82	90
140-31434-8	W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	129	67	132	4 *5-	25	93	111	121
140-31434-9	W-1054,1055 R3 OTM-45 FH	90	88	88	83	92	90	85	94
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	94	82	81	92	80	87	81	90
140-31434-11	W-1058 R3 OTM-45 IMPINGER 1,2&3 CONDENSATE	86	75	84	69	59	78	77	78
140-31434-12	W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	107	68	124	4 *5-	28	89	111	116
140-31434-13	W-1061,1062 QC OTM-45 FH FBT	94	90	91	91	81	90	90	96
140-31434-14	W-1063,1064,1066 QC OTM-45 BH FBT	22 *5-	3 *5-	139	0.03 *5-	0.03 *5-	8 *5-	124	130
140-31434-15	W-1065 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE FBT	85	85	84	61	64	91	79	83
140-31434-16	W-1067 QC OTM-45 BREAKTHROUGH XAD-2 RESI TUBE FBT	143	110	133	24 *5-	66	139	115	127
140-31434-17	W-1068,1069 QC OTM-45 FH PBT	96	94	95	94	91	94	90	101
140-31434-18	W-1070,1071,1073 QC OTM-45 BH PBT	13 *5-	10 *5-	125	0.03 *5-	1 *5-	11 *5-	106	114
140-31434-19	W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE PBT	84	75	86	69	56	89	84	83
140-31434-20	W-1074 QC OTM-45 BREAKTHROUGH XAD-2 RESI TUBE PBT	133	113	128	35	89	127	115	120
140-31434-21	W-1075 QC OTM-45 XAD-2 RESIN TUBE RB	136	113	126	26	69	120	114	116
140-31434-22	W-1076 QC OTM-45 MEOH/5% NH4OH RB	96	102	87	88	105	86	82	87
140-31434-23	W-1077 QC OTM-45 FILTER RE	91	92	87	91	91	94	87	98
140-31434-24	W-1078 QC OTM-45 DI WATER RB	85	84	81	74	64	88	86	86
140-31434-25	A-1550 OTM-45 MEDIA CHECK XAD	17 *5-	8 *5-	106	0.3 *5-	4 *5-	11 *5-	91	109
140-31434-26	A-1551 OTM-45 MEDIA CHECK FILTER	91	82	89	85	84	88	85	94
LCS 140-72552/2-B	Lab Control Sample	78	37	104	4 *5-	14 *5-	54	93	97

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Isotope Dilution Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHxA (25-150)	PFHxDA (25-150)	PFTDA (25-150)	PFUnA (25-150)	HFPODA (25-150)	C3PFBS (25-150)
LCS 140-72555/2-B	Lab Control Sample	85	89	82	88	89	93	82	88
LCS 140-72692/2-B	Lab Control Sample	78	67	80	73	57	77	83	81
LCSD 140-72552/3-B	Lab Control Sample Dup	51	24 *5-	107	5 *5-	18 *5-	37	94	98
LCSD 140-72555/3-B	Lab Control Sample Dup	86	79	83	93	82	84	81	88
LCSD 140-72692/3-B	Lab Control Sample Dup	84	82	85	69	63	86	87	84
MB 140-72552/14-B	Method Blank	86	35	111	6 *5-	13 *5-	53	97	110
MB 140-72552/1-B	Method Blank	60	24 *5-	108	2 *5-	14 *5-	38	101	107
MB 140-72555/1-B	Method Blank	84	83	83	88	82	85	81	86
MB 140-72692/1-B	Method Blank	72	63	83	75	57	69	81	81
		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFOS (25-150)	PFNA (25-150)	PFPeA (25-150)	PFOSA (25-150)	PFHxS (25-150)
140-31434-1	W-1040,1041 R1 OTM-45 FH	84	92	93	93	93	87	90	94
140-31434-2	W-1042,1043,1045 R1 OTM-45 BH	92	98	103	95	91	102	96	99
140-31434-3	W-1044 R1 OTM-45 IMPINGER 1,2&3 CONDENSATE	82	85	87	87	86	83	76	85
140-31434-4	W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	98	123	129	126	149	121	137	108
140-31434-5	W-1047,1048 R2 OTM-45 FH	83	86	92	90	87	87	83	89
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	86	104	100	89	101	95	93	97
140-31434-7	W-1051 R2 OTM-45 IMPINGER 1,2&3 CONDENSATE	87	90	90	91	86	91	65	93
140-31434-8	W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	106	122	117	114	133	126	120	105
140-31434-9	W-1054,1055 R3 OTM-45 FH	87	95	92	89	92	91	97	92
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	69	79	89	82	86	87	88	81
140-31434-11	W-1058 R3 OTM-45 IMPINGER 1,2&3 CONDENSATE	81	87	88	83	85	87	85	84
140-31434-12	W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	89	114	119	101	121	122	114	98
140-31434-13	W-1061,1062 QC OTM-45 FH FBT	93	98	100	94	95	94	97	96
140-31434-14	W-1063,1064,1066 QC OTM-45 BH FBT	109	122	93	13 *5-	53	135	37	75
140-31434-15	W-1065 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE FBT	82	91	92	88	95	84	89	86
140-31434-16	W-1067 QC OTM-45 BREAKTHROUGH XAD-2 RESI TUBE FBT	97	122	125	123	132	132	136	110
140-31434-17	W-1068,1069 QC OTM-45 FH PBT	97	101	104	98	103	96	103	100
140-31434-18	W-1070,1071,1073 QC OTM-45 BH PBT	104	90	53	14 *5-	25	122	17 *5-	55
140-31434-19	W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE PBT	84	89	90	87	89	84	71	86

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Isotope Dilution Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFOS (25-150)	PFNA (25-150)	PFPoA (25-150)	PFOSA (25-150)	PFHxS (25-150)
140-31434-20	W-1074 QC OTM-45 BREAKTH	93	121	124	121	128	127	134	107
140-31434-21	W-1075 QC OTM-45 XAD-2 RESIN TUBE RB	94	118	120	120	130	123	124	102
140-31434-22	W-1076 QC OTM-45 MECH/5% NH4OH RB	84	88	95	85	96	89	87	86
140-31434-23	W-1077 QC OTM-45 FILTER RE	92	97	98	96	95	91	97	100
140-31434-24	W-1078 QC OTM-45 DI WATER RB	85	90	94	89	87	87	72	87
140-31434-25	A-1550 OTM-45 MEDIA CHECK XAD	101	82	54	20 *5-	29	114	5 *5-	64
140-31434-26	A-1551 OTM-45 MEDIA CHECK FILTER	92	96	97	92	92	91	93	96
LCS 140-72552/2-B	Lab Control Sample	96	99	104	71	87	98	48	98
LCS 140-72555/2-B	Lab Control Sample	88	88	92	90	89	85	83	89
LCS 140-72692/2-B	Lab Control Sample	81	84	87	77	85	83	68	80
LCSD 140-72552/3-B	Lab Control Sample Dup	96	97	90	53	72	104	23 *5-	94
LCSD 140-72555/3-B	Lab Control Sample Dup	88	91	92	90	88	86	86	93
LCSD 140-72692/3-B	Lab Control Sample Dup	84	90	95	84	89	89	70	83
MB 140-72552/14-B	Method Blank	99	115	107	73	103	109	44	109
MB 140-72552/1-B	Method Blank	101	110	95	54	78	109	32	103
MB 140-72555/1-B	Method Blank	83	89	89	86	85	82	85	87
MB 140-72692/1-B	Method Blank	81	86	84	78	85	84	71	79

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		d3NMFOF (25-150)	d5NEFOF (25-150)	NMFM (25-150)	NEFM (25-150)	dEtFOF (25-150)	dMeFOF (25-150)	M242FTS (25-150)	M262FTS (25-150)
140-31434-1	W-1040,1041 R1 OTM-45 FH	98	117	86	86	91	90	111	107
140-31434-2	W-1042,1043,1045 R1 OTM-45 BH	115	117	93	97	86	90	101	103
140-31434-3	W-1044 R1 OTM-45 IMPINGER 1,2&3 CONDENSATE	87	100	57	61	64	61	92	100
140-31434-4	W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	159 *5+	170 *5+	60	42	74	102	213 *5+	164 *5+
140-31434-5	W-1047,1048 R2 OTM-45 FH	95	104	82	82	90	78	116	113
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	108	108	90	94	77	86	119	116
140-31434-7	W-1051 R2 OTM-45 IMPINGER 1,2&3 CONDENSATE	81	79	52	52	52	51	100	95
140-31434-8	W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	115	104	11 *5-	7 *5-	41	69	199 *5+	136
140-31434-9	W-1054,1055 R3 OTM-45 FH	105	109	90	91	105	98	112	110
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	98	107	80	78	74	81	102	95
140-31434-11	W-1058 R3 OTM-45 IMPINGER 1,2&3 CONDENSATE	92	101	55	52	60	65	86	100
140-31434-12	W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	111	103	22 *5-	15 *5-	44	60	173 *5+	133
140-31434-13	W-1061,1062 QC OTM-45 FH FBT	100	116	89	89	93	94	116	155 *5+
140-31434-14	W-1063,1064,1066 QC OTM-45 BH FBT	16 *5-	10 *5-	0 *5-	0 *5-	0.4 *5-	1 *5-	175 *5+	91

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Isotope Dilution Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		d3NMFOS (25-150)	d5NEFOS (25-150)	NMFM (25-150)	NEFM (25-150)	dEtFOSA (25-150)	dMeFOSA (25-150)	M242FTS (25-150)	M262FTS (25-150)
140-31434-15	W-1065 QC OTM-45 IMPINGER	94	104	57	60	85	88	89	100
140-31434-16	W-1067 QC OTM-45 BREAKTHROUGH XAD-2 RESI TUBE FBT	145	146	37	26	77	98	175 *5+	160 *5+
140-31434-17	W-1068,1069 QC OTM-45 FH PBT	105	119	94	99	100	99	115	165 *5+
140-31434-18	W-1070,1071,1073 QC OTM-45 BH PBT	9 *5-	8 *5-	0 *5-	0 *5-	0.7 *5-	1 *5-	125	49
140-31434-19	W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE PBT	88	101	59	56	64	64	94	93
140-31434-20	W-1074 QC OTM-45 BREAKTHROUGH XAD-2 RESI TUBE PBT	153 *5+	152 *5+	56	42	98	105	188 *5+	149
140-31434-21	W-1075 QC OTM-45 XAD-2 RESIN TUBE RB	150	137	43	29	78	98	190 *5+	150
140-31434-22	W-1076 QC OTM-45 MEOH/5% NH4OH RB	101	109	86	81	77	80	91	122
140-31434-23	W-1077 QC OTM-45 FILTER RE	108	120	88	87	92	93	106	147
140-31434-24	W-1078 QC OTM-45 DI WATER RB	96	94	58	57	58	61	96	100
140-31434-25	A-1550 OTM-45 MEDIA CHECK XAD	10 *5-	7 *5-	2 *5-	2 *5-	1 *5-	1 *5-	114	60
140-31434-26	A-1551 OTM-45 MEDIA CHECK FILTER	101	115	89	82	93	88	109	148
LCS 140-72552/2-B	Lab Control Sample	67	58	27	19 *5-	6 *5-	7 *5-	124	121
LCS 140-72555/2-B	Lab Control Sample	90	108	80	77	80	78	99	136
LCS 140-72692/2-B	Lab Control Sample	87	86	63	59	61	62	94	88
LCSD 140-72552/3-B	Lab Control Sample Dup	33	27	10 *5-	8 *5-	5 *5-	6 *5-	120	96
LCSD 140-72555/3-B	Lab Control Sample Dup	98	103	73	77	79	77	94	138
LCSD 140-72692/3-B	Lab Control Sample Dup	93	93	62	59	63	62	92	94
MB 140-72552/14-B	Method Blank	62	52	22 *5-	14 *5-	5 *5-	8 *5-	127	123
MB 140-72552/1-B	Method Blank	45	39	17 *5-	12 *5-	4 *5-	6 *5-	133	112
MB 140-72555/1-B	Method Blank	89	103	78	79	84	80	100	137
MB 140-72692/1-B	Method Blank	76	70	61	61	65	63	85	90
Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		M282FTS (25-150)	MFDEA (25-150)	MFHEA (25-150)	MFHUEA (25-150)	MFOEA (25-150)	MFOUEA (25-150)	M102FTS (25-150)	
140-31434-1	W-1040,1041 R1 OTM-45 FH	94	78	67	128	64	130	99	
140-31434-2	W-1042,1043,1045 R1 OTM-45 BH	102	103	103	117	74	117	103	
140-31434-3	W-1044 R1 OTM-45 IMPINGER 1,2&3 CONDENSATE	108	89	84	102	83	107	97	
140-31434-4	W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	211 *5+	65	68	240 *5+	78	234 *5+	137	
140-31434-5	W-1047,1048 R2 OTM-45 FH	97	74	69	111	70	118	92	
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	106	127	92	105	84	105	85	
140-31434-7	W-1051 R2 OTM-45 IMPINGER 1,2&3 CONDENSATE	97	61	83	109	88	110	92	
140-31434-8	W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	127	41	71	219 *5+	57	204 *5+	59	

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Isotope Dilution Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		M282FTS (25-150)	MFDEA (25-150)	MFHEA (25-150)	MFHUEA (25-150)	MFOEA (25-150)	MFOUEA (25-150)	M102FTS (25-150)
140-31434-9	W-1054,1055 R3 OTM-45 FH	90	89	79	126	65	141	86
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	88	115	74	94	62	90	64
140-31434-11	W-1058 R3 OTM-45 IMPINGER 1,2&3 CONDENSATE	87	91	68	105	76	110	91
140-31434-12	W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	131	53	74	227 *5+	61	210 *5+	73
140-31434-13	W-1061,1062 QC OTM-45 FH FBT	105	87	72	133	74	138	130
140-31434-14	W-1063,1064,1066 QC OTM-45 BH FBT	23 *5-	4 *5-	58	217 *5+	31	99	3 *5-
140-31434-15	W-1065 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE FBT	90	91	80	107	82	114	100
140-31434-16	W-1067 QC OTM-45 BREAKTHROUGH XAD-2 RESI TUBE FBT	189 *5+	83	83	245 *5+	64	244 *5+	125
140-31434-17	W-1068,1069 QC OTM-45 FH PBT	116	74	74	139	81	143	150
140-31434-18	W-1070,1071,1073 QC OTM-45 BH PBT	12 *5-	5 *5-	42	153 *5+	10 *5-	38	9 *5-
140-31434-19	W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE PBT	100	81	80	106	82	108	98
140-31434-20	W-1074 QC OTM-45 BREAKTHROUGH XAD-2 RESI TUBE PBT	194 *5+	84	80	229 *5+	85	233 *5+	131
140-31434-21	W-1075 QC OTM-45 XAD-2 RESIN TUBE RB	174 *5+	79	76	230 *5+	85	217 *5+	116
140-31434-22	W-1076 QC OTM-45 MEOH/5% NH4OH RB	101	89	66	130	67	122	98
140-31434-23	W-1077 QC OTM-45 FILTER RE	112	84	74	132	66	130	135
140-31434-24	W-1078 QC OTM-45 DI WATER RB	105	92	77	113	88	110	85
140-31434-25	A-1550 OTM-45 MEDIA CHECK XAD	18 *5-	5 *5-	43	121	11 *5-	41	8 *5-
140-31434-26	A-1551 OTM-45 MEDIA CHECK FILTER	106	80	72	132	78	129	128
LCS 140-72552/2-B	Lab Control Sample	87	37	68	177 *5+	52	150	45
LCS 140-72555/2-B	Lab Control Sample	98	62	69	117	64	119	123
LCS 140-72692/2-B	Lab Control Sample	80	81	79	104	79	109	68
LCSD 140-72552/3-B	Lab Control Sample Dup	50	16 *5-	56	153 *5+	23 *5-	96	25
LCSD 140-72555/3-B	Lab Control Sample Dup	99	73	71	117	68	122	116
LCSD 140-72692/3-B	Lab Control Sample Dup	88	68	91	109	88	118	89
MB 140-72552/14-B	Method Blank	93	27	69	184 *5+	49	143	32
MB 140-72552/1-B	Method Blank	58	22 *5-	56	172 *5+	38	114	26
MB 140-72555/1-B	Method Blank	96	68	69	118	64	116	123
MB 140-72692/1-B	Method Blank	79	67	81	101	83	112	62

Surrogate Legend

PFDA = 13C2 PFDA
PFDaA = 13C2 PFDaA
PFHxA = 13C2 PFHxA
PFHxDA = 13C2 PFHxDA

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Isotope Dilution Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

PFTDA = 13C2 PFTeDA
PFUnA = 13C2 PFUnA
HFPODA = 13C3 HFPO-DA
C3PFBS = 13C3 PFBS
PFBA = 13C4 PFBA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFOS = 13C4 PFOS
PFNA = 13C5 PFNA
PFPeA = 13C5 PFPeA
PFOSA = 13C8 FOSA
PFHxS = 18O2 PFHxS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
dEtFOSA = d-N-EtFOSA-M
dMeFOSA = d-N-MeFOSA-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
MFDEA = 13C-10:2 FTCA
MFHEA = 13C-6:2 FTCA
MFHUEA = 13C-6:2 FTUCA
MFOEA = 13C-8:2 FTCA
MFOUEA = 13C-8:2 FTUCA
M102FTS = 13C2 10:2 FTS

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-72552/14-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72552

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	R	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	R	1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	R	1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 16:41	1

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 140-72552/14-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72552

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	R	1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
8:2 Fluorotelomer carboxylic acid	ND		1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 16:41	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 16:41	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	86		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C2 PFDoA	35		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C2 PFHxA	111		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C2 PFTeDA	13	*5-	25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C2 PFUnA	53		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C3 HFPO-DA	97		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C3 PFBS	110		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C4 PFBA	99		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C2 PFHxDA	6	*5-	25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C4 PFHpA	115		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C4 PFOA	107		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C4 PFOS	73		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C5 PFNA	103		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C5 PFPeA	109		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C8 FOSA	44		25 - 150	04/24/23 08:34	05/09/23 16:41	1
18O2 PFHxS	109		25 - 150	04/24/23 08:34	05/09/23 16:41	1
d3-NMeFOSAA	62		25 - 150	04/24/23 08:34	05/09/23 16:41	1
d5-NEtFOSAA	52		25 - 150	04/24/23 08:34	05/09/23 16:41	1
d7-N-MeFOSE-M	22	*5-	25 - 150	04/24/23 08:34	05/09/23 16:41	1
d9-N-EtFOSE-M	14	*5-	25 - 150	04/24/23 08:34	05/09/23 16:41	1
d-N-EtFOSA-M	5	*5-	25 - 150	04/24/23 08:34	05/09/23 16:41	1
d-N-MeFOSA-M	8	*5-	25 - 150	04/24/23 08:34	05/09/23 16:41	1
M2-4:2 FTS	127		25 - 150	04/24/23 08:34	05/09/23 16:41	1
M2-6:2 FTS	123		25 - 150	04/24/23 08:34	05/09/23 16:41	1
M2-8:2 FTS	93		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C-10:2 FTCA	27		25 - 150	04/24/23 08:34	05/09/23 16:41	1

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 140-72552/14-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72552

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-6:2 FTCA	69		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C2 10:2 FTS	32		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C-6:2 FTUCA	184	*5+	25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C-8:2 FTCA	49		25 - 150	04/24/23 08:34	05/09/23 16:41	1
13C-8:2 FTUCA	143		25 - 150	04/24/23 08:34	05/09/23 16:41	1

Lab Sample ID: MB 140-72552/1-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72552

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		10.0	9.40	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.450	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoroheptanoic acid (PFHpA)	ND		3.00	2.60	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.890	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.270	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.260	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.150	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.230	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.210	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.190	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0640	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		10.0	8.70	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		20.0	11.0	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.00	1.10	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.170	ng/Sample		04/24/23 08:34	05/09/23 14:28	1

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 140-72552/1-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72552

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.370	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	R	1.00	0.640	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20.0	19.8	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	R	1.00	0.770	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	R	1.00	0.660	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	R	1.00	0.290	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.00	0.180	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.160	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.520	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	1.00	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.560	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
8:2 Fluorotelomer carboxylic acid	ND		1.00	0.380	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.200	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.700	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.310	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.120	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.130	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		1.00	0.140	ng/Sample		04/24/23 08:34	05/09/23 14:28	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.100	ng/Sample		04/24/23 08:34	05/09/23 14:28	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	60		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C2 PFDoA	24	*5-	25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C2 PFHxA	108		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C2 PFTeDA	14	*5-	25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C2 PFUnA	38		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C3 HFPO-DA	101		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C3 PFBS	107		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C4 PFBA	101		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C2 PFHxDA	2	*5-	25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C4 PFHpA	110		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C4 PFOA	95		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C4 PFOS	54		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C5 PFNA	78		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C5 PFPeA	109		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C8 FOSA	32		25 - 150	04/24/23 08:34	05/09/23 14:28	1
18O2 PFHxS	103		25 - 150	04/24/23 08:34	05/09/23 14:28	1

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 140-72552/1-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72552

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
%Recovery	Qualifier					
d3-NMeFOSAA	45		25 - 150	04/24/23 08:34	05/09/23 14:28	1
d5-NEtFOSAA	39		25 - 150	04/24/23 08:34	05/09/23 14:28	1
d7-N-MeFOSE-M	17	*5-	25 - 150	04/24/23 08:34	05/09/23 14:28	1
d9-N-EtFOSE-M	12	*5-	25 - 150	04/24/23 08:34	05/09/23 14:28	1
d-N-EtFOSA-M	4	*5-	25 - 150	04/24/23 08:34	05/09/23 14:28	1
d-N-MeFOSA-M	6	*5-	25 - 150	04/24/23 08:34	05/09/23 14:28	1
M2-4:2 FTS	133		25 - 150	04/24/23 08:34	05/09/23 14:28	1
M2-6:2 FTS	112		25 - 150	04/24/23 08:34	05/09/23 14:28	1
M2-8:2 FTS	58		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C-10:2 FTCA	22	*5-	25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C-6:2 FTCA	56		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C2 10:2 FTS	26		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C-6:2 FTUCA	172	*5+	25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C-8:2 FTCA	38		25 - 150	04/24/23 08:34	05/09/23 14:28	1
13C-8:2 FTUCA	114		25 - 150	04/24/23 08:34	05/09/23 14:28	1

Lab Sample ID: LCS 140-72552/2-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 72552

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	20.0	15.02		ng/Sample		75	60 - 140
Perfluoropentanoic acid (PFPeA)	20.0	16.04		ng/Sample		80	60 - 140
Perfluorohexanoic acid (PFHxA)	20.0	16.99		ng/Sample		85	60 - 140
Perfluoroheptanoic acid (PFHpA)	20.0	16.78		ng/Sample		84	60 - 140
Perfluorooctanoic acid (PFOA)	20.0	16.22		ng/Sample		81	60 - 140
Perfluorononanoic acid (PFNA)	20.0	15.46		ng/Sample		77	60 - 140
Perfluorodecanoic acid (PFDA)	20.0	14.88		ng/Sample		74	60 - 140
Perfluoroundecanoic acid (PFUnA)	20.0	16.41		ng/Sample		82	60 - 140
Perfluorododecanoic acid (PFDoA)	20.0	15.54		ng/Sample		78	60 - 140
Perfluorotridecanoic acid (PFTriA)	20.0	9.728	*-	ng/Sample		49	60 - 140
Perfluorotetradecanoic acid (PFTeA)	20.0	14.54		ng/Sample		73	60 - 140
Perfluorobutanesulfonic acid (PFBS)	17.7	13.26		ng/Sample		75	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	18.2	14.48		ng/Sample		80	60 - 140
Perfluoroheptanesulfonic acid (PFHpS)	19.0	17.69		ng/Sample		93	60 - 140
Perfluorooctanesulfonic acid (PFOS)	18.6	14.68		ng/Sample		79	60 - 140
Perfluorodecanesulfonic acid (PFDS)	19.3	5.685	*-	ng/Sample		29	60 - 140
Perfluorooctanesulfonamide (FOSA)	20.0	16.07		ng/Sample		80	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	18.8	15.25		ng/Sample		81	60 - 140
Perfluorononanesulfonic acid (PFNS)	19.2	10.04	*-	ng/Sample		52	60 - 140

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 140-72552/2-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 72552

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20.0	16.09		ng/Sample		80	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20.0	15.20		ng/Sample		76	60 - 140
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	18.7	14.91		ng/Sample		80	60 - 140
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	19.0	13.27		ng/Sample		70	60 - 140
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	19.2	14.21		ng/Sample		74	60 - 140
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	20.0	16.15	J	ng/Sample		81	60 - 140
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	18.6	10.69	*-	ng/Sample		57	60 - 140
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	18.8	4.730	*-	ng/Sample		25	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	18.8	21.14		ng/Sample		112	60 - 140
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	19.3	14.37		ng/Sample		75	60 - 140
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	20.0	13.73		ng/Sample		69	60 - 140
Perfluoro-n-octadecanoic acid (PFODA)	20.0	1.300	*- R	ng/Sample		7	60 - 140
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	20.0	21.06		ng/Sample		105	60 - 140
N-methylperfluorooctane sulfonamide (NMeFOSA)	20.0	17.22	R	ng/Sample		86	60 - 140
N-ethylperfluorooctane sulfonamide (NEtFOSA)	20.0	15.62	R	ng/Sample		78	60 - 140
Perfluoro-n-hexadecanoic acid (PFHxDA)	20.0	16.82	R	ng/Sample		84	60 - 140
Perfluorododecanesulfonic acid (PFDoS)	19.4	1.791	*-	ng/Sample		9	60 - 140
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	20.0	18.67		ng/Sample		93	60 - 140
10:2 Fluorotelomer carboxylic acid	20.0	16.36		ng/Sample		82	60 - 140
6:2 Fluorotelomer carboxylic acid	20.0	15.10		ng/Sample		76	60 - 140
7:3 Fluorotelomer carboxylic acid	20.0	17.55		ng/Sample		88	60 - 140
6:2 Fluorotelemer unsaturated acid	20.0	12.75		ng/Sample		64	60 - 140
8:2 Fluorotelomer carboxylic acid	20.0	14.79		ng/Sample		74	60 - 140
8:2 Fluorotelemer unsaturated acid	20.0	12.20		ng/Sample		61	60 - 140
5:3 Fluorotelomer carboxylic acid	20.0	20.57		ng/Sample		103	60 - 140
3-Perfluoropropylpropanoic acid	20.0	14.79		ng/Sample		74	60 - 140
Perfluoro-3-methoxypropanoic acid (PFMPA)	20.0	14.36		ng/Sample		72	60 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	20.0	15.22		ng/Sample		76	60 - 140
Perfluoro-4-ethylcyclohexanesulfonic acid	18.4	10.33	*-	ng/Sample		56	60 - 140

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 140-72552/2-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 72552

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	17.8	12.71		ng/Sample		71	60 - 140
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits				
13C2 PFDA	78		25 - 150				
13C2 PFDoA	37		25 - 150				
13C2 PFHxA	104		25 - 150				
13C2 PFTeDA	14	*5-	25 - 150				
13C2 PFUnA	54		25 - 150				
13C3 HFPO-DA	93		25 - 150				
13C3 PFBS	97		25 - 150				
13C4 PFBA	96		25 - 150				
13C2 PFHxDA	4	*5-	25 - 150				
13C4 PFHpA	99		25 - 150				
13C4 PFOA	104		25 - 150				
13C4 PFOS	71		25 - 150				
13C5 PFNA	87		25 - 150				
13C5 PFPeA	98		25 - 150				
13C8 FOSA	48		25 - 150				
18O2 PFHxS	98		25 - 150				
d3-NMeFOSAA	67		25 - 150				
d5-NEtFOSAA	58		25 - 150				
d7-N-MeFOSE-M	27		25 - 150				
d9-N-EtFOSE-M	19	*5-	25 - 150				
d-N-EtFOSA-M	6	*5-	25 - 150				
d-N-MeFOSA-M	7	*5-	25 - 150				
M2-4:2 FTS	124		25 - 150				
M2-6:2 FTS	121		25 - 150				
M2-8:2 FTS	87		25 - 150				
13C-10:2 FTCA	37		25 - 150				
13C-6:2 FTCA	68		25 - 150				
13C2 10:2 FTS	45		25 - 150				
13C-6:2 FTUCA	177	*5+	25 - 150				
13C-8:2 FTCA	52		25 - 150				
13C-8:2 FTUCA	150		25 - 150				

Lab Sample ID: LCSD 140-72552/3-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72552

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	20.0	16.03		ng/Sample		80	60 - 140	7	30
Perfluoropentanoic acid (PFPeA)	20.0	16.74		ng/Sample		84	60 - 140	4	30
Perfluorohexanoic acid (PFHxA)	20.0	16.89		ng/Sample		84	60 - 140	1	30
Perfluoroheptanoic acid (PFHpA)	20.0	17.33		ng/Sample		87	60 - 140	3	30
Perfluorooctanoic acid (PFOA)	20.0	16.86		ng/Sample		84	60 - 140	4	30
Perfluorononanoic acid (PFNA)	20.0	14.36		ng/Sample		72	60 - 140	7	30
Perfluorodecanoic acid (PFDA)	20.0	16.11		ng/Sample		81	60 - 140	8	30

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-72552/3-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72552

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	20.0	15.36		ng/Sample		77	60 - 140	7	30
Perfluorododecanoic acid (PFDoA)	20.0	15.94		ng/Sample		80	60 - 140	3	30
Perfluorotridecanoic acid (PFTriA)	20.0	12.40		ng/Sample		62	60 - 140	24	30
Perfluorotetradecanoic acid (PFTeA)	20.0	14.65		ng/Sample		73	60 - 140	1	30
Perfluorobutanesulfonic acid (PFBS)	17.7	15.08		ng/Sample		85	60 - 140	13	30
Perfluorohexanesulfonic acid (PFHxS)	18.2	14.91		ng/Sample		82	60 - 140	3	30
Perfluoroheptanesulfonic acid (PFHpS)	19.0	19.97		ng/Sample		105	60 - 140	12	30
Perfluorooctanesulfonic acid (PFOS)	18.6	15.84		ng/Sample		85	60 - 140	8	30
Perfluorodecanesulfonic acid (PFDS)	19.3	6.479	*-	ng/Sample		34	60 - 140	13	30
Perfluorooctanesulfonamide (FOSA)	20.0	17.14		ng/Sample		86	60 - 140	6	30
Perfluoropentanesulfonic acid (PFPeS)	18.8	16.13		ng/Sample		86	60 - 140	6	30
Perfluorononanesulfonic acid (PFNS)	19.2	10.56	*-	ng/Sample		55	60 - 140	5	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20.0	16.68		ng/Sample		83	60 - 140	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20.0	14.36		ng/Sample		72	60 - 140	6	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	18.7	15.61		ng/Sample		84	60 - 140	5	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	19.0	14.33		ng/Sample		76	60 - 140	8	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	19.2	16.72		ng/Sample		87	60 - 140	16	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	20.0	17.47	J	ng/Sample		87	60 - 140	8	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	18.6	11.18		ng/Sample		60	60 - 140	4	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	18.8	4.615	*-	ng/Sample		24	60 - 140	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	18.8	28.31	*+	ng/Sample		150	60 - 140	29	30
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	19.3	15.02		ng/Sample		78	60 - 140	4	30
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	20.0	14.44	R	ng/Sample		72	60 - 140	5	30
Perfluoro-n-octadecanoic acid (PFODA)	20.0	0.7152	J *- *1 R	ng/Sample		4	60 - 140	58	30
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	20.0	26.43		ng/Sample		132	60 - 140	23	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	20.0	17.64	R	ng/Sample		88	60 - 140	2	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	20.0	17.78	R	ng/Sample		89	60 - 140	13	30

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-72552/3-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72552

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoro-n-hexadecanoic acid (PFHxDA)	20.0	17.10	R	ng/Sample		85	60 - 140	2	30
Perfluorododecanesulfonic acid (PFDoS)	19.4	3.270	*- *1	ng/Sample		17	60 - 140	58	30
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	20.0	16.41		ng/Sample		82	60 - 140	13	30
10:2 Fluorotelomer carboxylic acid	20.0	17.56		ng/Sample		88	60 - 140	7	30
6:2 Fluorotelomer carboxylic acid	20.0	16.33		ng/Sample		82	60 - 140	8	30
7:3 Fluorotelomer carboxylic acid	20.0	23.29		ng/Sample		116	60 - 140	28	30
6:2 Fluorotelemer unsaturated acid	20.0	13.57		ng/Sample		68	60 - 140	6	30
8:2 Fluorotelomer carboxylic acid	20.0	26.90	*1	ng/Sample		135	60 - 140	58	30
8:2 Fluorotelemer unsaturated acid	20.0	13.66		ng/Sample		68	60 - 140	11	30
5:3 Fluorotelomer carboxylic acid	20.0	20.64		ng/Sample		103	60 - 140	0	30
3-Perfluoropropylpropanoic acid	20.0	15.61		ng/Sample		78	60 - 140	5	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	20.0	15.80		ng/Sample		79	60 - 140	10	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	20.0	14.46		ng/Sample		72	60 - 140	5	30
Perfluoro-4-ethylcyclohexanesulfonic acid	18.4	10.70	*-	ng/Sample		58	60 - 140	4	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	17.8	13.85		ng/Sample		78	60 - 140	9	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFDA	51		25 - 150
13C2 PFDoA	24	*5-	25 - 150
13C2 PFHxA	107		25 - 150
13C2 PFTeDA	18	*5-	25 - 150
13C2 PFUnA	37		25 - 150
13C3 HFPO-DA	94		25 - 150
13C3 PFBS	98		25 - 150
13C4 PFBA	96		25 - 150
13C2 PFHxDA	5	*5-	25 - 150
13C4 PFHpA	97		25 - 150
13C4 PFOA	90		25 - 150
13C4 PFOS	53		25 - 150
13C5 PFNA	72		25 - 150
13C5 PFPeA	104		25 - 150
13C8 FOSA	23	*5-	25 - 150
18O2 PFHxS	94		25 - 150
d3-NMeFOSAA	33		25 - 150
d5-NEtFOSAA	27		25 - 150
d7-N-MeFOSE-M	10	*5-	25 - 150
d9-N-EtFOSE-M	8	*5-	25 - 150
d-N-EtFOSA-M	5	*5-	25 - 150
d-N-MeFOSA-M	6	*5-	25 - 150
M2-4:2 FTS	120		25 - 150
M2-6:2 FTS	96		25 - 150

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-72552/3-B

Matrix: Air

Analysis Batch: 73110

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72552

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
M2-8:2 FTS	50		25 - 150
13C-10:2 FTCA	16	*5-	25 - 150
13C-6:2 FTCA	56		25 - 150
13C2 10:2 FTS	25		25 - 150
13C-6:2 FTUCA	153	*5+	25 - 150
13C-8:2 FTCA	23	*5-	25 - 150
13C-8:2 FTUCA	96		25 - 150

Lab Sample ID: MB 140-72555/1-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72555

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.00	1.30	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.180	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.210	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.620	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.650	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.0850	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.250	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.100	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.170	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.890	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.450	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.110	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.0880	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.00	0.0910	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		5.00	4.00	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		5.00	4.70	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.00	0.0980	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 16:11	1

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 140-72555/1-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72555

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		1.00	0.320	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		1.00	0.120	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		5.00	4.90	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.00	0.160	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.00	0.0950	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
10:2 Fluorotelomer carboxylic acid	ND		1.00	0.420	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
6:2 Fluorotelomer carboxylic acid	ND		1.00	0.430	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
7:3 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
6:2 Fluorotelemer unsaturated acid	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
8:2 Fluorotelomer carboxylic acid	ND		1.00	0.350	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
8:2 Fluorotelemer unsaturated acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
5:3 Fluorotelomer carboxylic acid	ND		1.00	0.480	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
3-Perfluoropropylpropanoic acid	ND		1.00	0.290	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.00	0.150	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.00	0.200	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		1.00	0.220	ng/Sample		04/24/23 09:01	05/03/23 16:11	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.00	0.140	ng/Sample		04/24/23 09:01	05/03/23 16:11	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	84		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C2 PFDoA	83		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C2 PFHxA	83		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C2 PFTeDA	82		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C2 PFUnA	85		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C3 HFPO-DA	81		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C3 PFBS	86		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C4 PFBA	83		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C2 PFHxDA	88		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C4 PFHpA	89		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C4 PFOA	89		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C4 PFOS	86		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C5 PFNA	85		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C5 PFPeA	82		25 - 150	04/24/23 09:01	05/03/23 16:11	1

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 140-72555/1-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72555

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	85		25 - 150	04/24/23 09:01	05/03/23 16:11	1
18O2 PFHxS	87		25 - 150	04/24/23 09:01	05/03/23 16:11	1
d3-NMeFOSAA	89		25 - 150	04/24/23 09:01	05/03/23 16:11	1
d5-NEtFOSAA	103		25 - 150	04/24/23 09:01	05/03/23 16:11	1
d7-N-MeFOSE-M	78		25 - 150	04/24/23 09:01	05/03/23 16:11	1
d9-N-EtFOSE-M	79		25 - 150	04/24/23 09:01	05/03/23 16:11	1
d-N-EtFOSA-M	84		25 - 150	04/24/23 09:01	05/03/23 16:11	1
d-N-MeFOSA-M	80		25 - 150	04/24/23 09:01	05/03/23 16:11	1
M2-4:2 FTS	100		25 - 150	04/24/23 09:01	05/03/23 16:11	1
M2-6:2 FTS	137		25 - 150	04/24/23 09:01	05/03/23 16:11	1
M2-8:2 FTS	96		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C-10:2 FTCA	68		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C-6:2 FTCA	69		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C2 10:2 FTS	123		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C-6:2 FTUCA	118		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C-8:2 FTCA	64		25 - 150	04/24/23 09:01	05/03/23 16:11	1
13C-8:2 FTUCA	116		25 - 150	04/24/23 09:01	05/03/23 16:11	1

Lab Sample ID: LCS 140-72555/2-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 72555

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	20.0	14.65		ng/Sample		73	60 - 140
Perfluoropentanoic acid (PFPeA)	20.0	15.90		ng/Sample		79	60 - 140
Perfluorohexanoic acid (PFHxA)	20.0	17.13		ng/Sample		86	60 - 140
Perfluoroheptanoic acid (PFHpA)	20.0	15.79		ng/Sample		79	60 - 140
Perfluorooctanoic acid (PFOA)	20.0	15.73		ng/Sample		79	60 - 140
Perfluorononanoic acid (PFNA)	20.0	15.17		ng/Sample		76	60 - 140
Perfluorodecanoic acid (PFDA)	20.0	16.11		ng/Sample		81	60 - 140
Perfluoroundecanoic acid (PFUnA)	20.0	15.40		ng/Sample		77	60 - 140
Perfluorododecanoic acid (PFDoA)	20.0	16.41		ng/Sample		82	60 - 140
Perfluorotridecanoic acid (PFTriA)	20.0	14.99		ng/Sample		75	60 - 140
Perfluorotetradecanoic acid (PFTeA)	20.0	16.94		ng/Sample		85	60 - 140
Perfluorobutanesulfonic acid (PFBS)	17.7	14.25		ng/Sample		81	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	18.2	14.13		ng/Sample		78	60 - 140
Perfluoroheptanesulfonic acid (PFHpS)	19.0	15.32		ng/Sample		80	60 - 140
Perfluorooctanesulfonic acid (PFOS)	18.6	14.23		ng/Sample		77	60 - 140
Perfluorodecanesulfonic acid (PFDS)	19.3	15.20		ng/Sample		79	60 - 140
Perfluorooctanesulfonamide (FOSA)	20.0	16.36		ng/Sample		82	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	18.8	14.71		ng/Sample		78	60 - 140

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 140-72555/2-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 72555

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorononanesulfonic acid (PFNS)	19.2	15.67		ng/Sample		82	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20.0	16.82		ng/Sample		84	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20.0	14.14		ng/Sample		71	60 - 140
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	18.7	14.54		ng/Sample		78	60 - 140
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	19.0	14.14		ng/Sample		75	60 - 140
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	19.2	15.01		ng/Sample		78	60 - 140
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	20.0	16.03		ng/Sample		80	60 - 140
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	18.6	14.54		ng/Sample		78	60 - 140
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	18.8	14.10		ng/Sample		75	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	18.8	15.07		ng/Sample		80	60 - 140
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	19.3	13.39		ng/Sample		69	60 - 140
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	20.0	14.86		ng/Sample		74	60 - 140
Perfluoro-n-octadecanoic acid (PFODA)	20.0	16.16		ng/Sample		81	60 - 140
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	20.0	18.11		ng/Sample		91	60 - 140
N-methylperfluorooctane sulfonamide (NMeFOSA)	20.0	15.59		ng/Sample		78	60 - 140
N-ethylperfluorooctane sulfonamide (NEtFOSA)	20.0	15.78		ng/Sample		79	60 - 140
Perfluoro-n-hexadecanoic acid (PFHxDA)	20.0	14.88		ng/Sample		74	60 - 140
Perfluorododecanesulfonic acid (PFDoS)	19.4	15.20		ng/Sample		79	60 - 140
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	20.0	16.67		ng/Sample		83	60 - 140
10:2 Fluorotelomer carboxylic acid	20.0	15.16		ng/Sample		76	60 - 140
6:2 Fluorotelomer carboxylic acid	20.0	17.87		ng/Sample		89	60 - 140
7:3 Fluorotelomer carboxylic acid	20.0	20.58		ng/Sample		103	60 - 140
6:2 Fluorotelemer unsaturated acid	20.0	14.45		ng/Sample		72	60 - 140
8:2 Fluorotelomer carboxylic acid	20.0	15.13		ng/Sample		76	60 - 140
8:2 Fluorotelemer unsaturated acid	20.0	13.49		ng/Sample		67	60 - 140
5:3 Fluorotelomer carboxylic acid	20.0	18.75		ng/Sample		94	60 - 140
3-Perfluoropropylpropanoic acid	20.0	14.21		ng/Sample		71	60 - 140
Perfluoro-3-methoxypropanoic acid (PFMPA)	20.0	14.92		ng/Sample		75	60 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	20.0	15.92		ng/Sample		80	60 - 140

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 140-72555/2-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 72555

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro-4-ethylcyclohexanesulfonic acid	18.4	14.70		ng/Sample		80	60 - 140
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	17.8	13.20		ng/Sample		74	60 - 140

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFDA	85		25 - 150
13C2 PFDoA	89		25 - 150
13C2 PFHxA	82		25 - 150
13C2 PFTeDA	89		25 - 150
13C2 PFUnA	93		25 - 150
13C3 HFPO-DA	82		25 - 150
13C3 PFBS	88		25 - 150
13C4 PFBA	88		25 - 150
13C2 PFHxDA	88		25 - 150
13C4 PFHpA	88		25 - 150
13C4 PFOA	92		25 - 150
13C4 PFOS	90		25 - 150
13C5 PFNA	89		25 - 150
13C5 PFPeA	85		25 - 150
13C8 FOSA	83		25 - 150
18O2 PFHxS	89		25 - 150
d3-NMeFOSAA	90		25 - 150
d5-NEtFOSAA	108		25 - 150
d7-N-MeFOSE-M	80		25 - 150
d9-N-EtFOSE-M	77		25 - 150
d-N-EtFOSA-M	80		25 - 150
d-N-MeFOSA-M	78		25 - 150
M2-4:2 FTS	99		25 - 150
M2-6:2 FTS	136		25 - 150
M2-8:2 FTS	98		25 - 150
13C-10:2 FTCA	62		25 - 150
13C-6:2 FTCA	69		25 - 150
13C2 10:2 FTS	123		25 - 150
13C-6:2 FTUCA	117		25 - 150
13C-8:2 FTCA	64		25 - 150
13C-8:2 FTUCA	119		25 - 150

Lab Sample ID: LCSD 140-72555/3-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72555

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	20.0	15.12		ng/Sample		76	60 - 140	3	30
Perfluoropentanoic acid (PFPeA)	20.0	15.86		ng/Sample		79	60 - 140	0	30
Perfluorohexanoic acid (PFHxA)	20.0	17.31		ng/Sample		87	60 - 140	1	30
Perfluoroheptanoic acid (PFHpA)	20.0	15.40		ng/Sample		77	60 - 140	3	30
Perfluorooctanoic acid (PFOA)	20.0	16.36		ng/Sample		82	60 - 140	4	30
Perfluorononanoic acid (PFNA)	20.0	15.72		ng/Sample		79	60 - 140	4	30

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-72555/3-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72555

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorodecanoic acid (PFDA)	20.0	16.16		ng/Sample		81	60 - 140	0	30
Perfluoroundecanoic acid (PFUnA)	20.0	16.89		ng/Sample		84	60 - 140	9	30
Perfluorododecanoic acid (PFDoA)	20.0	17.24		ng/Sample		86	60 - 140	5	30
Perfluorotridecanoic acid (PFTriA)	20.0	15.62		ng/Sample		78	60 - 140	4	30
Perfluorotetradecanoic acid (PFTeA)	20.0	18.41		ng/Sample		92	60 - 140	8	30
Perfluorobutanesulfonic acid (PFBS)	17.7	14.43		ng/Sample		82	60 - 140	1	30
Perfluorohexanesulfonic acid (PFHxS)	18.2	14.08		ng/Sample		77	60 - 140	0	30
Perfluoroheptanesulfonic acid (PFHpS)	19.0	16.29		ng/Sample		86	60 - 140	6	30
Perfluorooctanesulfonic acid (PFOS)	18.6	14.60		ng/Sample		79	60 - 140	3	30
Perfluorodecanesulfonic acid (PFDS)	19.3	16.49		ng/Sample		86	60 - 140	8	30
Perfluorooctanesulfonamide (FOSA)	20.0	16.12		ng/Sample		81	60 - 140	1	30
Perfluoropentanesulfonic acid (PFPeS)	18.8	15.51		ng/Sample		83	60 - 140	5	30
Perfluorononanesulfonic acid (PFNS)	19.2	16.05		ng/Sample		84	60 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20.0	15.74		ng/Sample		79	60 - 140	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20.0	14.66		ng/Sample		73	60 - 140	4	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	18.7	15.64		ng/Sample		84	60 - 140	7	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	19.0	13.87		ng/Sample		73	60 - 140	2	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	19.2	14.59		ng/Sample		76	60 - 140	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	20.0	16.55		ng/Sample		83	60 - 140	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	18.6	14.74		ng/Sample		79	60 - 140	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	18.8	13.92		ng/Sample		74	60 - 140	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	18.8	15.50		ng/Sample		82	60 - 140	3	30
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	19.3	12.63		ng/Sample		65	60 - 140	6	30
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	20.0	15.50		ng/Sample		77	60 - 140	4	30
Perfluoro-n-octadecanoic acid (PFODA)	20.0	15.02		ng/Sample		75	60 - 140	7	30
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	20.0	19.73		ng/Sample		99	60 - 140	9	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	20.0	16.11		ng/Sample		81	60 - 140	3	30

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-72555/3-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72555

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
N-ethylperfluorooctane sulfonamide (NEtFOSA)	20.0	16.37		ng/Sample		82	60 - 140	4	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	20.0	14.67		ng/Sample		73	60 - 140	1	30
Perfluorododecanesulfonic acid (PFDoS)	19.4	15.29		ng/Sample		79	60 - 140	1	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	20.0	16.24		ng/Sample		81	60 - 140	3	30
10:2 Fluorotelomer carboxylic acid	20.0	14.70		ng/Sample		74	60 - 140	3	30
6:2 Fluorotelomer carboxylic acid	20.0	17.18		ng/Sample		86	60 - 140	4	30
7:3 Fluorotelomer carboxylic acid	20.0	19.42		ng/Sample		97	60 - 140	6	30
6:2 Fluorotelemer unsaturated acid	20.0	14.36		ng/Sample		72	60 - 140	1	30
8:2 Fluorotelomer carboxylic acid	20.0	15.69		ng/Sample		78	60 - 140	4	30
8:2 Fluorotelemer unsaturated acid	20.0	13.71		ng/Sample		69	60 - 140	2	30
5:3 Fluorotelomer carboxylic acid	20.0	19.32		ng/Sample		97	60 - 140	3	30
3-Perfluoropropylpropanoic acid	20.0	14.33		ng/Sample		72	60 - 140	1	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	20.0	14.91		ng/Sample		75	60 - 140	0	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	20.0	16.68		ng/Sample		83	60 - 140	5	30
Perfluoro-4-ethylcyclohexanesulfonic acid	18.4	14.69		ng/Sample		80	60 - 140	0	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	17.8	14.27		ng/Sample		80	60 - 140	8	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C2 PFDA	86		25 - 150
13C2 PFDoA	79		25 - 150
13C2 PFHxA	83		25 - 150
13C2 PFTeDA	82		25 - 150
13C2 PFUnA	84		25 - 150
13C3 HFPO-DA	81		25 - 150
13C3 PFBS	88		25 - 150
13C4 PFBA	88		25 - 150
13C2 PFHxDA	93		25 - 150
13C4 PFHpA	91		25 - 150
13C4 PFOA	92		25 - 150
13C4 PFOS	90		25 - 150
13C5 PFNA	88		25 - 150
13C5 PFPeA	86		25 - 150
13C8 FOSA	86		25 - 150
18O2 PFHxS	93		25 - 150
d3-NMeFOSAA	98		25 - 150
d5-NEtFOSAA	103		25 - 150
d7-N-MeFOSE-M	73		25 - 150
d9-N-EtFOSE-M	77		25 - 150
d-N-EtFOSA-M	79		25 - 150
d-N-MeFOSA-M	77		25 - 150

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-72555/3-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72555

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
M2-4:2 FTS	94		25 - 150
M2-6:2 FTS	138		25 - 150
M2-8:2 FTS	99		25 - 150
13C-10:2 FTCA	73		25 - 150
13C-6:2 FTCA	71		25 - 150
13C2 10:2 FTS	116		25 - 150
13C-6:2 FTUCA	117		25 - 150
13C-8:2 FTCA	68		25 - 150
13C-8:2 FTUCA	122		25 - 150

Lab Sample ID: MB 140-72692/1-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72692

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.00	0.800	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoropentanoic acid (PFPeA)	ND		2.00	0.260	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorohexanoic acid (PFHxA)	ND		2.00	0.760	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoroheptanoic acid (PFHpA)	ND		2.00	0.610	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorooctanoic acid (PFOA)	ND		2.00	0.380	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorononanoic acid (PFNA)	ND		2.00	0.210	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorodecanoic acid (PFDA)	ND		2.00	0.260	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoroundecanoic acid (PFUnA)	ND		2.00	0.300	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorododecanoic acid (PFDoA)	ND		2.00	0.210	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorotridecanoic acid (PFTriA)	ND		2.00	0.320	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.00	0.450	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.00	0.180	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.00	0.230	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.00	0.460	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.00	0.260	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.00	0.330	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorooctanesulfonamide (FOSA)	ND		2.00	0.800	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.00	0.240	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorononanesulfonic acid (PFNS)	ND		2.00	0.150	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.00	0.410	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.00	0.300	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.00	0.230	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.00	0.550	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.00	0.520	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.00	0.940	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.00	0.260	ng/Sample		04/27/23 11:24	05/03/23 14:22	1

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 140-72692/1-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72692

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.00	0.280	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.00	0.560	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	ND		2.00	0.430	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		2.00	0.740	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.00	0.510	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		2.00	0.410	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.00	0.340	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.00	0.540	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.00	0.570	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.00	0.320	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.00	0.580	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
10:2 Fluorotelomer carboxylic acid	ND		2.00	1.20	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
6:2 Fluorotelomer carboxylic acid	ND		2.00	1.20	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
7:3 Fluorotelomer carboxylic acid	ND		2.00	1.50	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
6:2 Fluorotelemer unsaturated acid	ND		2.00	0.360	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
8:2 Fluorotelomer carboxylic acid	ND		2.00	1.30	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
8:2 Fluorotelemer unsaturated acid	ND		2.00	0.800	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
5:3 Fluorotelomer carboxylic acid	ND		2.00	1.20	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
3-Perfluoropropylpropanoic acid	ND		2.00	0.880	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.00	0.580	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.00	0.790	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoro-4-ethylcyclohexanesulfonic acid	ND		2.00	0.640	ng/Sample		04/27/23 11:24	05/03/23 14:22	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		2.00	0.510	ng/Sample		04/27/23 11:24	05/03/23 14:22	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	72		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C2 PFDoA	63		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C2 PFHxA	83		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C2 PFTeDA	57		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C2 PFUnA	69		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C3 HFPO-DA	81		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C3 PFBS	81		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C4 PFBA	81		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C2 PFHxDA	75		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C4 PFHpA	86		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C4 PFOA	84		25 - 150	04/27/23 11:24	05/03/23 14:22	1

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 140-72692/1-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 72692

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	78		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C5 PFNA	85		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C5 PFPeA	84		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C8 FOSA	71		25 - 150	04/27/23 11:24	05/03/23 14:22	1
18O2 PFHxS	79		25 - 150	04/27/23 11:24	05/03/23 14:22	1
d3-NMeFOSAA	76		25 - 150	04/27/23 11:24	05/03/23 14:22	1
d5-NEtFOSAA	70		25 - 150	04/27/23 11:24	05/03/23 14:22	1
d7-N-MeFOSE-M	61		25 - 150	04/27/23 11:24	05/03/23 14:22	1
d9-N-EtFOSE-M	61		25 - 150	04/27/23 11:24	05/03/23 14:22	1
d-N-EtFOSA-M	65		25 - 150	04/27/23 11:24	05/03/23 14:22	1
d-N-MeFOSA-M	63		25 - 150	04/27/23 11:24	05/03/23 14:22	1
M2-4:2 FTS	85		25 - 150	04/27/23 11:24	05/03/23 14:22	1
M2-6:2 FTS	90		25 - 150	04/27/23 11:24	05/03/23 14:22	1
M2-8:2 FTS	79		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C-10:2 FTCA	67		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C-6:2 FTCA	81		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C2 10:2 FTS	62		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C-6:2 FTUCA	101		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C-8:2 FTCA	83		25 - 150	04/27/23 11:24	05/03/23 14:22	1
13C-8:2 FTUCA	112		25 - 150	04/27/23 11:24	05/03/23 14:22	1

Lab Sample ID: LCS 140-72692/2-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 72692

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	40.0	34.11		ng/Sample		85	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	35.66		ng/Sample		89	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	38.22		ng/Sample		96	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	34.67		ng/Sample		87	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	36.27		ng/Sample		91	60 - 140
Perfluorononanoic acid (PFNA)	40.0	35.17		ng/Sample		88	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	36.71		ng/Sample		92	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	36.84		ng/Sample		92	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	37.82		ng/Sample		95	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	30.43		ng/Sample		76	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	42.44		ng/Sample		106	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	30.24		ng/Sample		86	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	30.87		ng/Sample		85	60 - 140
Perfluoroheptanesulfonic acid (PFHpS)	38.1	35.20		ng/Sample		92	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	33.77		ng/Sample		91	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	31.13		ng/Sample		81	60 - 140

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 140-72692/2-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 72692

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorooctanesulfonamide (FOSA)	40.0	36.82		ng/Sample		92	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	33.18		ng/Sample		88	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	37.88		ng/Sample		99	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.78		ng/Sample		89	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	32.87		ng/Sample		82	60 - 140
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	37.4	32.38		ng/Sample		87	60 - 140
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	37.9	31.25		ng/Sample		82	60 - 140
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	38.3	32.20		ng/Sample		84	60 - 140
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	36.39		ng/Sample		91	60 - 140
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	33.99		ng/Sample		91	60 - 140
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	25.27		ng/Sample		67	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	35.60		ng/Sample		94	60 - 140
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	38.6	31.57		ng/Sample		82	60 - 140
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	40.0	35.63		ng/Sample		89	60 - 140
Perfluoro-n-octadecanoic acid (PFODA)	40.0	31.43		ng/Sample		79	60 - 140
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	40.0	34.85		ng/Sample		87	60 - 140
N-methylperfluorooctane sulfonamide (NMeFOSA)	40.0	35.66		ng/Sample		89	60 - 140
N-ethylperfluorooctane sulfonamide (NEtFOSA)	40.0	36.38		ng/Sample		91	60 - 140
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	34.78		ng/Sample		87	60 - 140
Perfluorododecanesulfonic acid (PFDoS)	38.7	26.44		ng/Sample		68	60 - 140
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	40.0	37.88		ng/Sample		95	60 - 140
10:2 Fluorotelomer carboxylic acid	40.0	28.44		ng/Sample		71	60 - 140
6:2 Fluorotelomer carboxylic acid	40.0	33.12		ng/Sample		83	60 - 140
7:3 Fluorotelomer carboxylic acid	40.0	36.77		ng/Sample		92	60 - 140
6:2 Fluorotelemer unsaturated acid	40.0	34.89		ng/Sample		87	60 - 140
8:2 Fluorotelomer carboxylic acid	40.0	34.53		ng/Sample		86	60 - 140
8:2 Fluorotelemer unsaturated acid	40.0	32.80		ng/Sample		82	60 - 140
5:3 Fluorotelomer carboxylic acid	40.0	42.47		ng/Sample		106	60 - 140
3-Perfluoropropylpropanoic acid	40.0	37.29		ng/Sample		93	60 - 140

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 140-72692/2-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 72692

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro-3-methoxypropanoic acid (PFMPA)	40.0	33.33		ng/Sample		83	60 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	40.0	36.01		ng/Sample		90	60 - 140
Perfluoro-4-ethylcyclohexanesulfonic acid	36.9	32.30		ng/Sample		88	60 - 140
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	35.6	31.92		ng/Sample		90	60 - 140

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFDA	78		25 - 150
13C2 PFDoA	67		25 - 150
13C2 PFHxA	80		25 - 150
13C2 PFTeDA	57		25 - 150
13C2 PFUnA	77		25 - 150
13C3 HFPO-DA	83		25 - 150
13C3 PFBS	81		25 - 150
13C4 PFBA	81		25 - 150
13C2 PFHxDA	73		25 - 150
13C4 PFHpA	84		25 - 150
13C4 PFOA	87		25 - 150
13C4 PFOS	77		25 - 150
13C5 PFNA	85		25 - 150
13C5 PFPeA	83		25 - 150
13C8 FOSA	68		25 - 150
18O2 PFHxS	80		25 - 150
d3-NMeFOSAA	87		25 - 150
d5-NEtFOSAA	86		25 - 150
d7-N-MeFOSE-M	63		25 - 150
d9-N-EtFOSE-M	59		25 - 150
d-N-EtFOSA-M	61		25 - 150
d-N-MeFOSA-M	62		25 - 150
M2-4:2 FTS	94		25 - 150
M2-6:2 FTS	88		25 - 150
M2-8:2 FTS	80		25 - 150
13C-10:2 FTCA	81		25 - 150
13C-6:2 FTCA	79		25 - 150
13C2 10:2 FTS	68		25 - 150
13C-6:2 FTUCA	104		25 - 150
13C-8:2 FTCA	79		25 - 150
13C-8:2 FTUCA	109		25 - 150

Lab Sample ID: LCSD 140-72692/3-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72692

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Perfluorobutanoic acid (PFBA)	40.0	34.54		ng/Sample		86	60 - 140	1	30
Perfluoropentanoic acid (PFPeA)	40.0	33.54		ng/Sample		84	60 - 140	6	30
Perfluorohexanoic acid (PFHxA)	40.0	37.48		ng/Sample		94	60 - 140	2	30

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-72692/3-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72692

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	40.0	34.10		ng/Sample		85	60 - 140	2	30
Perfluorooctanoic acid (PFOA)	40.0	33.47		ng/Sample		84	60 - 140	8	30
Perfluorononanoic acid (PFNA)	40.0	33.81		ng/Sample		85	60 - 140	4	30
Perfluorodecanoic acid (PFDA)	40.0	36.30		ng/Sample		91	60 - 140	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	36.21		ng/Sample		91	60 - 140	2	30
Perfluorododecanoic acid (PFDoA)	40.0	37.04		ng/Sample		93	60 - 140	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	29.58		ng/Sample		74	60 - 140	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.78		ng/Sample		104	60 - 140	2	30
Perfluorobutanesulfonic acid (PFBS)	35.4	31.12		ng/Sample		88	60 - 140	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.33		ng/Sample		89	60 - 140	5	30
Perfluoroheptanesulfonic acid (PFHpS)	38.1	34.69		ng/Sample		91	60 - 140	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	32.61		ng/Sample		88	60 - 140	3	30
Perfluorodecanesulfonic acid (PFDS)	38.6	34.38		ng/Sample		89	60 - 140	10	30
Perfluorooctanesulfonamide (FOSA)	40.0	36.42		ng/Sample		91	60 - 140	1	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	32.60		ng/Sample		87	60 - 140	2	30
Perfluorononanesulfonic acid (PFNS)	38.4	34.61		ng/Sample		90	60 - 140	9	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	33.23		ng/Sample		83	60 - 140	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	32.24		ng/Sample		81	60 - 140	2	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	37.4	28.18		ng/Sample		75	60 - 140	14	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	37.9	31.22		ng/Sample		82	60 - 140	0	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	38.3	31.54		ng/Sample		82	60 - 140	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	36.95		ng/Sample		92	60 - 140	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	32.37		ng/Sample		87	60 - 140	5	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	31.24		ng/Sample		83	60 - 140	21	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	33.96		ng/Sample		90	60 - 140	5	30
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	38.6	28.64		ng/Sample		74	60 - 140	10	30
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	40.0	35.73		ng/Sample		89	60 - 140	0	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	32.00		ng/Sample		80	60 - 140	2	30

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-72692/3-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72692

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	40.0	35.08		ng/Sample		88	60 - 140	1	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	40.0	35.49		ng/Sample		89	60 - 140	0	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	40.0	34.02		ng/Sample		85	60 - 140	7	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	33.74		ng/Sample		84	60 - 140	3	30
Perfluorododecanesulfonic acid (PFDoS)	38.7	27.12		ng/Sample		70	60 - 140	3	30
Nonafluoro-3,6-dioxahheptanoic acid (NFDHA)	40.0	35.79		ng/Sample		89	60 - 140	6	30
10:2 Fluorotelomer carboxylic acid	40.0	34.35		ng/Sample		86	60 - 140	19	30
6:2 Fluorotelomer carboxylic acid	40.0	33.75		ng/Sample		84	60 - 140	2	30
7:3 Fluorotelomer carboxylic acid	40.0	35.97		ng/Sample		90	60 - 140	2	30
6:2 Fluorotelemer unsaturated acid	40.0	34.14		ng/Sample		85	60 - 140	2	30
8:2 Fluorotelomer carboxylic acid	40.0	33.26		ng/Sample		83	60 - 140	4	30
8:2 Fluorotelemer unsaturated acid	40.0	32.02		ng/Sample		80	60 - 140	2	30
5:3 Fluorotelomer carboxylic acid	40.0	33.35		ng/Sample		83	60 - 140	24	30
3-Perfluoropropylpropanoic acid	40.0	35.37		ng/Sample		88	60 - 140	5	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	40.0	31.12		ng/Sample		78	60 - 140	7	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	40.0	34.91		ng/Sample		87	60 - 140	3	30
Perfluoro-4-ethylcyclohexanesulfonic acid	36.9	30.53		ng/Sample		83	60 - 140	6	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	35.6	31.93		ng/Sample		90	60 - 140	0	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFDA	84		25 - 150
13C2 PFDoA	82		25 - 150
13C2 PFHxA	85		25 - 150
13C2 PFTeDA	63		25 - 150
13C2 PFUnA	86		25 - 150
13C3 HFPO-DA	87		25 - 150
13C3 PFBS	84		25 - 150
13C4 PFBA	84		25 - 150
13C2 PFHxDA	69		25 - 150
13C4 PFHpA	90		25 - 150
13C4 PFOA	95		25 - 150
13C4 PFOS	84		25 - 150
13C5 PFNA	89		25 - 150
13C5 PFPeA	89		25 - 150
13C8 FOSA	70		25 - 150
18O2 PFHxS	83		25 - 150
d3-NMeFOSAA	93		25 - 150
d5-NEtFOSAA	93		25 - 150

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QC Sample Results

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-72692/3-B

Matrix: Air

Analysis Batch: 72895

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 72692

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
d7-N-MeFOSE-M	62		25 - 150
d9-N-EtFOSE-M	59		25 - 150
d-N-EtFOSA-M	63		25 - 150
d-N-MeFOSA-M	62		25 - 150
M2-4:2 FTS	92		25 - 150
M2-6:2 FTS	94		25 - 150
M2-8:2 FTS	88		25 - 150
13C-10:2 FTCA	68		25 - 150
13C-6:2 FTCA	91		25 - 150
13C2 10:2 FTS	89		25 - 150
13C-6:2 FTUCA	109		25 - 150
13C-8:2 FTCA	88		25 - 150
13C-8:2 FTUCA	118		25 - 150

QC Association Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

LCMS

Prep Batch: 72552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-2	W-1042,1043,1045 R1 OTM-45 BH	Total/NA	Air	None	
140-31434-4	W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 R	Total/NA	Air	None	
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	Total/NA	Air	None	
140-31434-8	W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 R	Total/NA	Air	None	
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	Total/NA	Air	None	
140-31434-12	W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 R	Total/NA	Air	None	
140-31434-14	W-1063,1064,1066 QC OTM-45 BH FBT	Total/NA	Air	None	
140-31434-16	W-1067 QC OTM-45 BREAKTHROUGH XAD-2 F	Total/NA	Air	None	
140-31434-18	W-1070,1071,1073 QC OTM-45 BH PBT	Total/NA	Air	None	
140-31434-20	W-1074 QC OTM-45 BREAKTHROUGH XAD-2 F	Total/NA	Air	None	
140-31434-21	W-1075 QC OTM-45 XAD-2 RESIN TUBE RB	Total/NA	Air	None	
140-31434-22	W-1076 QC OTM-45 MECH/5% NH4OH RB	Total/NA	Air	None	
140-31434-25	A-1550 OTM-45 MEDIA CHECK XAD	Total/NA	Air	None	
MB 140-72552/14-B	Method Blank	Total/NA	Air	None	
MB 140-72552/1-B	Method Blank	Total/NA	Air	None	
LCS 140-72552/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-72552/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 72555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-1	W-1040,1041 R1 OTM-45 FH	Total/NA	Air	None	
140-31434-5	W-1047,1048 R2 OTM-45 FH	Total/NA	Air	None	
140-31434-9	W-1054,1055 R3 OTM-45 FH	Total/NA	Air	None	
140-31434-13	W-1061,1062 QC OTM-45 FH FBT	Total/NA	Air	None	
140-31434-17	W-1068,1069 QC OTM-45 FH PBT	Total/NA	Air	None	
140-31434-23	W-1077 QC OTM-45 FILTER RB	Total/NA	Air	None	
140-31434-26	A-1551 OTM-45 MEDIA CHECK FILTER	Total/NA	Air	None	
MB 140-72555/1-B	Method Blank	Total/NA	Air	None	
LCS 140-72555/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-72555/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 72588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-1	W-1040,1041 R1 OTM-45 FH	Total/NA	Air	Split	72555
140-31434-5	W-1047,1048 R2 OTM-45 FH	Total/NA	Air	Split	72555
140-31434-9	W-1054,1055 R3 OTM-45 FH	Total/NA	Air	Split	72555
140-31434-13	W-1061,1062 QC OTM-45 FH FBT	Total/NA	Air	Split	72555
140-31434-17	W-1068,1069 QC OTM-45 FH PBT	Total/NA	Air	Split	72555
140-31434-23	W-1077 QC OTM-45 FILTER RB	Total/NA	Air	Split	72555
140-31434-26	A-1551 OTM-45 MEDIA CHECK FILTER	Total/NA	Air	Split	72555
MB 140-72555/1-B	Method Blank	Total/NA	Air	Split	72555
LCS 140-72555/2-B	Lab Control Sample	Total/NA	Air	Split	72555
LCSD 140-72555/3-B	Lab Control Sample Dup	Total/NA	Air	Split	72555

Cleanup Batch: 72642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-2	W-1042,1043,1045 R1 OTM-45 BH	Total/NA	Air	Split	72552
140-31434-4	W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 R	Total/NA	Air	Split	72552
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	Total/NA	Air	Split	72552
140-31434-8	W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 R	Total/NA	Air	Split	72552
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	Total/NA	Air	Split	72552

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QC Association Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

LCMS (Continued)

Cleanup Batch: 72642 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-12	W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 R	Total/NA	Air	Split	72552
140-31434-14	W-1063,1064,1066 QC OTM-45 BH FBT	Total/NA	Air	Split	72552
140-31434-16	W-1067 QC OTM-45 BREAKTHROUGH XAD-2 F	Total/NA	Air	Split	72552
140-31434-18	W-1070,1071,1073 QC OTM-45 BH PBT	Total/NA	Air	Split	72552
140-31434-20	W-1074 QC OTM-45 BREAKTHROUGH XAD-2 F	Total/NA	Air	Split	72552
140-31434-21	W-1075 QC OTM-45 XAD-2 RESIN TUBE RB	Total/NA	Air	Split	72552
140-31434-22	W-1076 QC OTM-45 MECH/5% NH4OH RB	Total/NA	Air	Split	72552
140-31434-25	A-1550 OTM-45 MEDIA CHECK XAD	Total/NA	Air	Split	72552
MB 140-72552/14-B	Method Blank	Total/NA	Air	Split	72552
MB 140-72552/1-B	Method Blank	Total/NA	Air	Split	72552
LCS 140-72552/2-B	Lab Control Sample	Total/NA	Air	Split	72552
LCSD 140-72552/3-B	Lab Control Sample Dup	Total/NA	Air	Split	72552

Prep Batch: 72692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-3	W-1044 R1 OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	None	
140-31434-7	W-1051 R2 OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	None	
140-31434-11	W-1058 R3 OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	None	
140-31434-15	W-1065 QC OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	None	
140-31434-19	W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	None	
140-31434-24	W-1078 QC OTM-45 DI WATER RB	Total/NA	Air	None	
MB 140-72692/1-B	Method Blank	Total/NA	Air	None	
LCS 140-72692/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-72692/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 72696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-3	W-1044 R1 OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	Split	72692
140-31434-7	W-1051 R2 OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	Split	72692
140-31434-11	W-1058 R3 OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	Split	72692
140-31434-15	W-1065 QC OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	Split	72692
140-31434-19	W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	Split	72692
140-31434-24	W-1078 QC OTM-45 DI WATER RB	Total/NA	Air	Split	72692
MB 140-72692/1-B	Method Blank	Total/NA	Air	Split	72692
LCS 140-72692/2-B	Lab Control Sample	Total/NA	Air	Split	72692
LCSD 140-72692/3-B	Lab Control Sample Dup	Total/NA	Air	Split	72692

Analysis Batch: 72895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-1	W-1040,1041 R1 OTM-45 FH	Total/NA	Air	537 (modified)	72588
140-31434-3	W-1044 R1 OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	537 (modified)	72696
140-31434-5	W-1047,1048 R2 OTM-45 FH	Total/NA	Air	537 (modified)	72588
140-31434-7	W-1051 R2 OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	537 (modified)	72696
140-31434-9	W-1054,1055 R3 OTM-45 FH	Total/NA	Air	537 (modified)	72588
140-31434-11	W-1058 R3 OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	537 (modified)	72696
140-31434-13	W-1061,1062 QC OTM-45 FH FBT	Total/NA	Air	537 (modified)	72588
140-31434-15	W-1065 QC OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	537 (modified)	72696
140-31434-17	W-1068,1069 QC OTM-45 FH PBT	Total/NA	Air	537 (modified)	72588
140-31434-19	W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDE	Total/NA	Air	537 (modified)	72696
140-31434-23	W-1077 QC OTM-45 FILTER RB	Total/NA	Air	537 (modified)	72588
140-31434-24	W-1078 QC OTM-45 DI WATER RB	Total/NA	Air	537 (modified)	72696

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QC Association Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

LCMS (Continued)

Analysis Batch: 72895 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-26	A-1551 OTM-45 MEDIA CHECK FILTER	Total/NA	Air	537 (modified)	72588
MB 140-72555/1-B	Method Blank	Total/NA	Air	537 (modified)	72588
MB 140-72692/1-B	Method Blank	Total/NA	Air	537 (modified)	72696
LCS 140-72555/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	72588
LCS 140-72692/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	72696
LCSD 140-72555/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	72588
LCSD 140-72692/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	72696

Analysis Batch: 73110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-2	W-1042,1043,1045 R1 OTM-45 BH	Total/NA	Air	537 (modified)	73155
140-31434-4	W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 R	Total/NA	Air	537 (modified)	72642
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	Total/NA	Air	537 (modified)	73155
140-31434-8	W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 R	Total/NA	Air	537 (modified)	72642
140-31434-12	W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 R	Total/NA	Air	537 (modified)	72642
140-31434-14	W-1063,1064,1066 QC OTM-45 BH FBT	Total/NA	Air	537 (modified)	72642
140-31434-16	W-1067 QC OTM-45 BREAKTHROUGH XAD-2 F	Total/NA	Air	537 (modified)	72642
140-31434-18	W-1070,1071,1073 QC OTM-45 BH PBT	Total/NA	Air	537 (modified)	72642
140-31434-20	W-1074 QC OTM-45 BREAKTHROUGH XAD-2 F	Total/NA	Air	537 (modified)	72642
140-31434-21	W-1075 QC OTM-45 XAD-2 RESIN TUBE RB	Total/NA	Air	537 (modified)	72642
140-31434-22	W-1076 QC OTM-45 MEOH/5% NH4OH RB	Total/NA	Air	537 (modified)	72642
140-31434-25	A-1550 OTM-45 MEDIA CHECK XAD	Total/NA	Air	537 (modified)	72642
MB 140-72552/14-B	Method Blank	Total/NA	Air	537 (modified)	72642
MB 140-72552/1-B	Method Blank	Total/NA	Air	537 (modified)	72642
LCS 140-72552/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	72642
LCSD 140-72552/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	72642

Cleanup Batch: 73155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-2	W-1042,1043,1045 R1 OTM-45 BH	Total/NA	Air	Dilution	72642
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	Total/NA	Air	Dilution	72642
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	Total/NA	Air	Dilution	72642

Analysis Batch: 73320

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	Total/NA	Air	537 (modified)	73155

Lab Chronicle

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1040,1041 R1 OTM-45 FH

Lab Sample ID: 140-31434-1

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	79 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			40 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		20	1 mL	1 mL	72895	05/03/23 16:38	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1042,1043,1045 R1 OTM-45 BH

Lab Sample ID: 140-31434-2

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	73155	05/09/23 08:19	CAC	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 17:44	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1044 R1 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-3

CONDENSATE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.83333 Sample	10 mL	72692	04/27/23 11:24	ACW	EET KNX
Total/NA	Cleanup	Split			10 mL	10 mL	72696	04/27/23 15:23	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 14:49	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1046 R1 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-4

XAD-2 RESIN TUBE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 15:04	CAC	EET KNX
Instrument ID: LCA										

Lab Chronicle

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1047,1048 R2 OTM-45 FH

Lab Sample ID: 140-31434-5

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	65 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			33 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		10	1 mL	1 mL	72895	05/03/23 16:47	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1049,1050,1052 R2 OTM-45 BH

Lab Sample ID: 140-31434-6

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	73155	05/09/23 08:19	CAC	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 15:12	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1051 R2 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-7

CONDENSATE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.80645 Sample	10 mL	72692	04/27/23 11:24	ACW	EET KNX
Total/NA	Cleanup	Split			10 mL	10 mL	72696	04/27/23 15:23	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 14:59	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1053 R2 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-8

XAD-2 RESIN TUBE

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 15:21	CAC	EET KNX
Instrument ID: LCA										

Lab Chronicle

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1054,1055 R3 OTM-45 FH

Lab Sample ID: 140-31434-9

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			25 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		10	1 mL	1 mL	72895	05/03/23 16:56	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1056,1057,1059 R3 OTM-45 BH

Lab Sample ID: 140-31434-10

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Cleanup	Dilution			166 uL	10000 uL	73155	05/09/23 08:19	CAC	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73320	05/17/23 09:03	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1058 R3 OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-11

CONDENSATE

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.81967 Sample	10 mL	72692	04/27/23 11:24	ACW	EET KNX
Total/NA	Cleanup	Split			10 mL	10 mL	72696	04/27/23 15:23	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 15:08	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1060 R3 OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-12

XAD-2 RESIN TUBE

Date Collected: 04/19/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 15:39	CAC	EET KNX
Instrument ID: LCA										

Lab Chronicle

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1061,1062 QC OTM-45 FH FBT

Lab Sample ID: 140-31434-13

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			25 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 17:04	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1063,1064,1066 QC OTM-45 BH FBT

Lab Sample ID: 140-31434-14

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 15:48	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1065 QC OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-15

CONDENSATE FBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	72692	04/27/23 11:24	ACW	EET KNX
Total/NA	Cleanup	Split			10 mL	10 mL	72696	04/27/23 15:23	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 15:16	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1067 QC OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-16

XAD-2 RESIN TUBE FBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 16:14	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1068,1069 QC OTM-45 FH PBT

Lab Sample ID: 140-31434-17

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			25 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 17:13	CAC	EET KNX
Instrument ID: LCA										

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Lab Chronicle

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1070,1071,1073 QC OTM-45 BH PBT

Lab Sample ID: 140-31434-18

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 16:23	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1072 QC OTM-45 IMPINGERS 1,2&3

Lab Sample ID: 140-31434-19

CONDENSATE PBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	72692	04/27/23 11:24	ACW	EET KNX
Total/NA	Cleanup	Split			10 mL	10 mL	72696	04/27/23 15:23	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 15:25	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1074 QC OTM-45 BREAKTHROUGH

Lab Sample ID: 140-31434-20

XAD-2 RESIN TUBE PBT

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 16:32	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1075 QC OTM-45 XAD-2 RESIN TUBE RB

Lab Sample ID: 140-31434-21

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 16:50	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1076 QC OTM-45 MEOH/5% NH4OH RB

Lab Sample ID: 140-31434-22

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			25 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 16:58	CAC	EET KNX
Instrument ID: LCA										

Eurofins Knoxville

Lab Chronicle

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: W-1077 QC OTM-45 FILTER RB

Lab Sample ID: 140-31434-23

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			25 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 17:22	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: W-1078 QC OTM-45 DI WATER RB

Lab Sample ID: 140-31434-24

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	72692	04/27/23 11:24	ACW	EET KNX
Total/NA	Cleanup	Split			10 mL	10 mL	72696	04/27/23 15:23	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 15:34	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: A-1550 OTM-45 MEDIA CHECK XAD

Lab Sample ID: 140-31434-25

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 17:07	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: A-1551 OTM-45 MEDIA CHECK FILTER

Lab Sample ID: 140-31434-26

Date Collected: 04/18/23 00:00

Matrix: Air

Date Received: 04/19/23 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			25 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 17:31	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-72552/14-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 16:41	CAC	EET KNX
Instrument ID: LCA										

Eurofins Knoxville

Lab Chronicle

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: Method Blank

Date Collected: N/A

Date Received: N/A

Lab Sample ID: MB 140-72552/1-B

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 14:28	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Date Collected: N/A

Date Received: N/A

Lab Sample ID: MB 140-72555/1-B

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			25 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 16:11	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Date Collected: N/A

Date Received: N/A

Lab Sample ID: MB 140-72692/1-B

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			.25 Sample	10 mL	72692	04/27/23 11:24	ACW	EET KNX
Total/NA	Cleanup	Split			10 mL	10 mL	72696	04/27/23 15:23	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 14:22	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample

Date Collected: N/A

Date Received: N/A

Lab Sample ID: LCS 140-72552/2-B

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 14:37	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample

Date Collected: N/A

Date Received: N/A

Lab Sample ID: LCS 140-72555/2-B

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			25 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 16:20	CAC	EET KNX
Instrument ID: LCA										

Eurofins Knoxville

Lab Chronicle

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-72692/2-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			.25 Sample	10 mL	72692	04/27/23 11:24	ACW	EET KNX
Total/NA	Cleanup	Split			10 mL	10 mL	72696	04/27/23 15:23	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 14:31	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-72552/3-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	72552	04/24/23 08:34	ACW	EET KNX
Total/NA	Cleanup	Split			180 mL	10 mL	72642	04/26/23 12:55	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	73110	05/09/23 14:46	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-72555/3-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	72555	04/24/23 09:01	ACW	EET KNX
Total/NA	Cleanup	Split			25 mL	10 mL	72588	04/25/23 09:12	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 16:29	CAC	EET KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-72692/3-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			.25 Sample	10 mL	72692	04/27/23 11:24	ACW	EET KNX
Total/NA	Cleanup	Split			10 mL	10 mL	72696	04/27/23 15:23	ACW	EET KNX
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	72895	05/03/23 14:40	CAC	EET KNX
Instrument ID: LCA										

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL [REDACTED]

Eurofins Knoxville

Accreditation/Certification Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-25
ANAB	Dept. of Energy	L2311.01	02-13-25
ANAB	ISO/IEC 17025	L2311	02-13-25
Arkansas DEQ	State	88-0688	06-16-23
California	State	2423	06-30-23
Colorado	State	TN00009	02-29-24
Connecticut	State	PH-0223	09-30-23
Florida	NELAP	E87177	06-30-23
Georgia (DW)	State	906	07-27-25
Hawaii	State	NA	07-27-23
Kansas	NELAP	E-10349	10-31-23
Kentucky (DW)	State	90101	12-31-23
Louisiana	NELAP	83979	06-30-23
Louisiana (All)	NELAP	83979	06-30-23
Louisiana (DW)	State	LA019	12-31-23
Maryland	State	277	03-31-24
Michigan	State	9933	07-27-25
Nevada	State	TN00009	07-31-23
New Hampshire	NELAP	2999	01-17-24
New Jersey	NELAP	TN001	06-20-23
New York	NELAP	10781	03-31-24
North Carolina (DW)	State	21705	07-31-23
North Carolina (WW/SW)	State	64	12-31-23
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-23
Oregon	NELAP	TNI0189	01-01-24
Pennsylvania	NELAP	68-00576	12-01-23
Tennessee	State	02014	07-27-25
Texas	NELAP	T104704380-22-17	08-31-23
US Fish & Wildlife	US Federal Programs	058448	07-31-23
USDA	US Federal Programs	525-22-279-18762	10-06-25
Utah	NELAP	TN00009	07-31-23
Virginia	NELAP	460176	09-14-23
Washington	State	C593	01-19-24
West Virginia (DW)	State	9955C	12-31-23
West Virginia DEP	State	345	04-30-24
Wisconsin	State	998044300	08-31-23

Method Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET KNX
Dilution	Dilution and Re-fortification of Standards	None	EET KNX
None	Leaching Procedure	TAL SOP	EET KNX
None	Leaching Procedure for Condensate	TAL SOP	EET KNX
None	Leaching Procedure for Filter	TAL SOP	EET KNX
Split	Source Air Split	None	EET KNX

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL [REDACTED]

Sample Summary

Client: Zeus Industrial Products Inc
Project/Site: Zeus Industrial Products - OTM-45

Job ID: 140-31434-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-31434-1	W-1040,1041 R1 OTM-45 FH	Air	04/18/23 00:00	04/19/23 17:45
140-31434-2	W-1042,1043,1045 R1 OTM-45 BH	Air	04/18/23 00:00	04/19/23 17:45
140-31434-3	W-1044 R1 OTM-45 IMPINGERS 1,2&3 CONDENSATE	Air	04/18/23 00:00	04/19/23 17:45
140-31434-4	W-1046 R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	04/18/23 00:00	04/19/23 17:45
140-31434-5	W-1047,1048 R2 OTM-45 FH	Air	04/18/23 00:00	04/19/23 17:45
140-31434-6	W-1049,1050,1052 R2 OTM-45 BH	Air	04/18/23 00:00	04/19/23 17:45
140-31434-7	W-1051 R2 OTM-45 IMPINGERS 1,2&3 CONDENSATE	Air	04/18/23 00:00	04/19/23 17:45
140-31434-8	W-1053 R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	04/18/23 00:00	04/19/23 17:45
140-31434-9	W-1054,1055 R3 OTM-45 FH	Air	04/19/23 00:00	04/19/23 17:45
140-31434-10	W-1056,1057,1059 R3 OTM-45 BH	Air	04/19/23 00:00	04/19/23 17:45
140-31434-11	W-1058 R3 OTM-45 IMPINGERS 1,2&3 CONDENSATE	Air	04/19/23 00:00	04/19/23 17:45
140-31434-12	W-1060 R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	04/19/23 00:00	04/19/23 17:45
140-31434-13	W-1061,1062 QC OTM-45 FH FBT	Air	04/18/23 00:00	04/19/23 17:45
140-31434-14	W-1063,1064,1066 QC OTM-45 BH FBT	Air	04/18/23 00:00	04/19/23 17:45
140-31434-15	W-1065 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE FBT	Air	04/18/23 00:00	04/19/23 17:45
140-31434-16	W-1067 QC OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE FBT	Air	04/18/23 00:00	04/19/23 17:45
140-31434-17	W-1068,1069 QC OTM-45 FH PBT	Air	04/18/23 00:00	04/19/23 17:45
140-31434-18	W-1070,1071,1073 QC OTM-45 BH PBT	Air	04/18/23 00:00	04/19/23 17:45
140-31434-19	W-1072 QC OTM-45 IMPINGERS 1,2&3 CONDENSATE PBT	Air	04/18/23 00:00	04/19/23 17:45
140-31434-20	W-1074 QC OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE PBT	Air	04/18/23 00:00	04/19/23 17:45
140-31434-21	W-1075 QC OTM-45 XAD-2 RESIN TUBE RB	Air	04/18/23 00:00	04/19/23 17:45
140-31434-22	W-1076 QC OTM-45 MEOH/5% NH4OH RB	Air	04/18/23 00:00	04/19/23 17:45
140-31434-23	W-1077 QC OTM-45 FILTER RB	Air	04/18/23 00:00	04/19/23 17:45
140-31434-24	W-1078 QC OTM-45 DI WATER RB	Air	04/18/23 00:00	04/19/23 17:45
140-31434-25	A-1550 OTM-45 MEDIA CHECK XAD	Air	04/18/23 00:00	04/19/23 17:45
140-31434-26	A-1551 OTM-45 MEDIA CHECK FILTER	Air	04/18/23 00:00	04/19/23 17:45

Request for Analysis/Chain-of-Custody – RFA/COC #001
Zeus Industrial Products
PFAS Testing in Source Emissions



Environment Testing
TestAmerica

Project Identification:	Zeus
Client Name:	Zeus Industrial Products
Client Contact:	Chris Glven
TestAmerica Project Manager:	Ms. Courtney Adkins
TestAmerica Program Manager:	Mr. Billy Anderson
	Office: [REDACTED]
	Cell: [REDACTED]

Analytical Testing QC Requirements:

The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PBT" = Proof Blank Train, "TB" = Trip Blank

Project Deliverables:

Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:
PFAS Compounds	14 Days to Extraction; 40 Days to Analysis

Laboratory Deliverable Turnaround Requirements:

Analytical Due Date: 21 Days from Lab Receipt
(Review-Released Data)

Data Package Due Date: 28 Days from Lab Receipt

Laboratory Destination: Eurofins TestAmerica
5815 Middlebrook Pike
Knoxville, TN 37921

Lab Phone Number: (865) 291-3000

Courier: FedEx



140-31434 Chain of Custody

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
W-1040 R1 OTM-45 Filter (Combine with W-1041)	1	4-18-23 m		125 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train PFAS Analyses	Knoxville: Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1041 R1 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with W-1040)	1	4-18-23 m		125 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train PFAS Analyses	Knoxville: Use this solvent sample in the Particulate Filter extraction.
W-1042 R1 OTM-45 XAD-2 Resin Tube	1	4-18-23 m		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train PFAS Analyses	Knoxville: Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .

Request for Analysis/Chain-of-Custody – RFA/COC #001
Zeus Industrial Products
PFAS Testing in Source Emissions



Environment Testing
TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
W-1043 R1 OTM-45 BH of Filter Holder & Condenser MeOH Rinse (Combine with W-1042)	1	4/18-23 rv		125 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train PFAS Analyses	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction.
W-1044 R1 OTM-45 Impingers 1,2 & 3 Condensate	1	4-18-23 rv		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train PFAS Analyses	Knoxville: Measure and record the volume of the Impinger Composite. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1045 R1 OTM-45 Impinger Glassware MeOH Rinse (Combine with W-1042)	1	4-18-23 rv		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train PFAS Analyses	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
W-1046 R1 OTM-45 Breakthrough XAD-2 Resin Tube	1	4-18-23 rv		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train PFAS Analyses	Knoxville: Perform the regular XAD-2 Resin Extraction. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1047 R2 OTM-45 Filter (Combine with W-1048)	2	4-18-23 rv		125 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train PFAS Analyses	Knoxville: Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .

Request for Analysis/Chain-of-Custody – RFA/COC #001
Zeus Industrial Products
PFAS Testing in Source Emissions



Environment Testing
TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
W-1048 R2 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with W-1047)	2	4-18-23		125 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train PFAS Analyses	Knoxville: Use this solvent sample in the Particulate Filter extraction.
W-1049 R2 OTM-45 XAD-2 Resin Tube	2	4-18-23		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train PFAS Analyses	Knoxville: Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1050 R2 OTM-45 BH of Filter Holder & Condenser MeOH Rinse (Combine with W-1049)	2	4-18-23		125 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train PFAS Analyses	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction.
W-1051 R2 OTM-45 Impingers 1,2 & 3 Condensate	2	4-18-23		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train PFAS Analyses	Knoxville: Measure and record the volume of the Impinger Composite. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1052 R2 OTM-45 Impinger Glassware MeOH Rinse (Combine with W-1049)	2	4-18-23		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train PFAS Analyses	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.

Request for Analysis/Chain-of-Custody – RFA/COC #001
Zeus Industrial Products
PFAS Testing in Source Emissions



Environment Testing
TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
W-1053 R2 OTM-45 Breakthrough XAD-2 Resin Tube	2	4-18-23		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train PFAS Analyses	Knoxville: Perform the regular XAD-2 Resin Extraction. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1054 R3 OTM-45 Filter (Combine with W-1055)	3	4-19-23		125 mL HDPE Wide- Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train PFAS Analyses	Knoxville: Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1055 R3 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with W-1054)	3	4-19-23		125 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train PFAS Analyses	Knoxville: Use this solvent sample in the Particulate Filter extraction.
W-1056 R3 OTM-45 XAD-2 Resin Tube	3	4-19-23		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train PFAS Analyses	Knoxville: Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1057 R3 OTM-45 BH of Filter Holder & Condenser MeOH Rinse (Combine with W-1056)	3	4-19-23		125 mL HDPE Wide- Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train PFAS Analyses	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction.

Request for Analysis/Chain-of-Custody – RFA/COC #001
Zeus Industrial Products
PFAS Testing in Source Emissions



Environment Testing
TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
W-1058 R3 OTM-45 Impingers 1,2 & 3 Condensate	3	4-19-23		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train PFAS Analyses	Knoxville: Measure and record the volume of the Impinger Composite. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1059 R3 OTM-45 Impinger Glassware MeOH Rinse (Combine with W-1056)	3	4-19-23		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide (NH ₄ OH) Rinse OTM-45 Train PFAS Analyses	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
W-1060 R3 OTM-45 Breakthrough XAD-2 Resin Tube	3	4-19-23		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train PFAS Analyses	Knoxville: Perform the regular XAD-2 Resin Extraction. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1061 QC OTM-45 Filter FBT (Combine with W-1062)	QC	4-18-23	Field Blank Train	125 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Field Blank Train PFAS Analyses	Knoxville: Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1062 QC OTM-45 FH of Filter Holder & Probe MeOH Rinse FBT (Combine with W-1061)	QC	4-18-23	Field Blank Train	125 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Field Blank Train PFAS Analyses	Knoxville: Use this solvent sample in the Particulate Filter extraction.

Request for Analysis/Chain-of-Custody – RFA/COC #001

Zeus Industrial Products

PFAS Testing in Source Emissions

Environment Testing
TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
W-1063 QC OTM-45 XAD-2 Resin Tube FBT	QC	4-18-23	Field Blank Train	XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Field Blank Train PFAS Analyses	Knoxville: Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1064 QC OTM-45 BH of Filter Holder & Condenser MeOH Rinse FBT (Combine with W-1063)	QC	4-18-23	Field Blank Train	125 mL HDPE Wide- Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Field Blank Train PFAS Analyses	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction.
W-1065 QC OTM-45 Impingers 1,2 & 3 Condensate FBT	QC	4-18-23	Field Blank Train	1 Liter HDPE Wide- Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Field Blank Train PFAS Analyses	Knoxville: Measure and record the volume of the Impinger Composite. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1066 QC OTM-45 Impinger Glassware MeOH Rinse FBT (Combine with W-1063)	QC	4-18-23	Field Blank Train	250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Field Blank Train PFAS Analyses	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
W-1067 QC OTM-45 Breakthrough XAD-2 Resin Tube FBT	QC	4-18-23	Field Blank Train	XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Field Blank Train PFAS Analyses	Knoxville: Perform the regular XAD-2 Resin Extraction. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .

Request for Analysis/Chain-of-Custody – RFA/COC #001
Zeus Industrial Products
PFAS Testing in Source Emissions



Environment Testing
TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
W-1068 QC OTM-45 Filter PBT (Combine with W-1069)	QC	4-18-23 m	Proof Blank Train	125 mL HDPE Wide- Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Proof Blank Train PFAS Analyses	Knoxville: Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab.
W-1069 QC OTM-45 FH of Filter Holder & Probe MeOH Rinse PBT (Combine with W-1068)	QC	4-18-23 m	Proof Blank Train	125 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Proof Blank Train PFAS Analyses	Knoxville: Use this solvent sample in the Particulate Filter extraction.
W-1070 QC OTM-45 XAD-2 Resin Tube PBT	QC	4-18-23 m	Proof Blank Train	XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Proof Blank Train PFAS Analyses	Knoxville: Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab.
W-1071 QC OTM-45 BH of Filter Holder & Condenser MeOH Rinse PBT (Combine with W-1070)	QC	4-18-23 m	Proof Blank Train	125 mL HDPE Wide- Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Proof Blank Train PFAS Analyses	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction.
W-1072 QC OTM-45 Impingers 1,2 & 3 Condensate PBT	QC	4-18-23 m	Proof Blank Train	1 Liter HDPE Wide- Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Proof Blank Train PFAS Analyses	Knoxville: Measure and record the volume of the Impinger Composite. ----- Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab.

Request for Analysis/Chain-of-Custody – RFA/COC #001

Zeus Industrial Products

PFAS Testing in Source Emissions

Environment Testing
TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
W-1073 QC OTM-45 Impinger Glassware MeOH Rinse PBT	QC	4-18-23 m	Proof Blank Train	250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Proof Blank Train PFAS Analyses	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
W-1074 QC OTM-45 Breakthrough XAD-2 Resin Tube PBT	QC	4-18-23 w	Proof Blank Train	XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Proof Blank Train PFAS Analyses	Knoxville: Perform the regular XAD-2 Resin Extraction. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1075 QC OTM-45 XAD-2 Resin Tube RB	QC	4-18-23 DC	Reagent Blank	XAD-2 Resin Tube	XAD-2 Resin Tube Reagent Blank OTM-45 Train PFAS Analyses	Knoxville: Follow the solvent extraction procedure for the XAD-2 resin sample. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1076 QC OTM-45 MeOH/5% NH4OH RB	QC	4-18-23 ac	Reagent Blank	250 mL HDPE Wide- Mouth Bottle	Methanol/5% Ammonium Hydroxide (NH4OH) Trip Blank OTM-45 Train PFAS Analyses	Knoxville: Perform the solvent extraction on this sample. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1077 QC OTM-45 Filter RB	QC	4-18-23 zv	Reagent Blank	250 mL HDPE Wide- Mouth Bottle	Particulate Filter Reagent Blank (82.6 mm Whatman Glass Microfiber) OTM-45 Train PFAS Analyses	Knoxville: Perform the solvent extraction on this sample. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .
W-1078 QC OTM-45 DI Water RB	QC	4-18-23 w	Reagent Blank	500 mL HDPE Wide- Mouth Bottle	Deionized (DI) Water Reagent Blank OTM-45 Train PFAS Analyses	Knoxville: Perform the solvent extraction on this sample. Analyze for the Method 537 Targeted Analyte List at the Knoxville Lab .

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:

Comments

(Please write "NONE" if no comment applicable)

(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.

NONE

(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:

RT 1.0, 0.7 / CT 0.8, 0.5c

(3) Record any apparent sample loss/breakage.

NONE

(4) Record any unidentified samples transported with this shipment of samples:

NONE

(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):

HAND DELIVERED, NO CUSTODY SEALS

Custody Transfer:

Relinquished By:

Tim Russell

Name

BARR

Company

4-19-23/1200

Date/Time

Accepted By:

Doug Cahill

Name

ETA KNOX

Company

4-19-23/1200

Date/Time

Relinquished By:

Doug Cahill

Name

ETA KNOX

Company

4/19/23 1745

Date/Time

Accepted By:

McL Anderson

Name

ETA KNOX

Company

4/19/23 1745

Date/Time

Relinquished By:

Name

Company

Date/Time

Accepted By:

Name

Company

Date/Time

Relinquished By:

Name

Company

Date/Time

Accepted By:

Name

Company

Date/Time

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	/			☐ Containers, Broken	
2. Were ambient air containers received intact?			/	☐ Checked in lab	
3. The coolers/containers custody seal if present, is it intact?			/	☐ Yes ☐ NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : <u>5C75</u> Correction factor: <u>-0.2°C</u>	/			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?	/			☐ Containers, Broken	
6. Were samples received in appropriate containers?	/			☐ Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received	
8. Were all of the samples listed on the COC received?	/			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	/			☐ COC; No Date/Time; Client Contacted	
10. Was the sampler identified on the COC?	/		/	☐ Sampler Not Listed on COC	
11. Is the client and project name/# identified?	/			☐ COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	/			☐ COC No tests on COC	
13. Is the matrix of the samples noted?	/			☐ COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ COC Incorrect/Incomplete	
15. Were samples received within holding time?	/			☐ Holding Time - Receipt	
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative	
17. Were VOA samples received without headspace?			/	☐ Headspace (VOA only) ☐ Residual Chlorine	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/		
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info	
Project #: <u>14006472</u> PM Instructions: <u>NA</u>					

Box 16A: pH Preservation
 Box 18A: Residual Chlorine
 Preservative: _____
 Lot Number: _____
 Exp Date: _____
 Analyst: _____
 Date: _____
 Time: _____

Sample Receiving Associate: *[Signature]*Date: 4-20-23

QA026R32.doc, 062719

Appendix D

Calibration Data



Routine Dry Gas Meter Calibration

Control Module: C-17
DGM S/N : 22071021
Date : 4/13/2023
Technician : DAH

Leak checks
Negative 0.0 15 in. Hg
Positive : 0.0 > 5 in. W.C

Barometric Press. : 28.77
Previous Y : 0.9935
Previous dH@ : 1.7544

Orifice Diff Pressure, in. W.C.	Wet Test Volume, Ft ³	Dry Gas Meter Temp, °F		Wet Test Meter Temp, °F	Dry Gas Volume Ft ³	Elapsed Time of Cal. Point		Meter Coefficient Y	Orifice Coefficient dH@
		Inlet	Outlet						
Nominal 0.50	Initial 8573.50	Initial 73.0	Initial 73.0	Initial 72.0	Initial 49.540				
Actual 0.50	Final 8578.50	Final 73.0	Final 73.0	Final 72.0	Final 54.510	Minutes 12	Sec. 25.6		
	Total 5.00	Average 73.0	Average 73.0	Average 72.0	Total 4.970	Minutes 12.43		1.0066	1.8184
		73.0	Tm						
Nominal 1.00	Initial 8568.00	Initial 72.0	Initial 72.0	Initial 72.0	Initial 44.040				
Actual 1.00	Final 8573.00	Final 73.0	Final 73.0	Final 72.0	Final 49.040	Minutes 8	Sec. 48.44		
	Total 5.00	Average 72.5	Average 72.5	Average 72.0	Total 5.000	8.81		0.9984	1.8285
		72.5	Tm						
Nominal 2.00	Initial 8556.00	Initial 71.0	Initial 71.0	Initial 72.0	Initial 32.030				
Actual 2.00	Final 8561.00	Final 71.0	Final 71.0	Final 72.0	Final 37.020	Minutes 6	Sec. 13.06		
	Total 5.00	Average 71.0	Average 71.0	Average 72.0	Total 4.990	6.22		0.9950	1.8278
		71.0	Tm						
Nominal 3.00	Initial 8562.00	Initial 71.0	Initial 71.0	Initial 72.0	Initial 38.030				
Actual 3.00	Final 8567.00	Final 72.0	Final 72.0	Final 72.0	Final 43.040	Minutes 5	Sec. 6.65		
	Total 5.00	Average 71.5	Average 71.5	Average 72.0	Total 5.010	5.11		0.9895	1.8507
		71.5	Tm						
Nominal 4.00	Initial 8580.00	Initial 73.0	Initial 73.0	Initial 73.0	Initial 56.010				
Actual 4.00	Final 8590.00	Final 74.0	Final 74.0	Final 73.0	Final 66.050	Minutes 8	Sec. 52.3		
	Total 10.00	Average 73.5	Average 73.5	Average 73.0	Total 10.040	8.87		0.9869	1.8588
		73.5	Tm						
Average								0.9953	1.8368

Reviewed By: *Ruby Walden*

Emission Measurement Center (EMC) Approved Alternate Method (ALT-009)
Alternative Method 5 Post-Test Calibration
Extruder Exhaust ()
Control Module C-17

Input Data	Symbol	Units	Run 1	Run 2	Run 3
Test date	-	-	4/18/2023	4/18/2023	4/19/2023
Test period	-	-	844 - 1148	1230 - 1534	813 - 1115
Total run time	t	min	180	180	180
Total sample volume measured by dry gas meter	V _m	acf	116.2	117.0	119.7
Average dry gas meter temp	T _m	°F	68.1	76.1	70.9
Absolute average dry gas meter temp	T _m	°R	527.8	535.8	530.5
Barometric pressure	P _b	inches Hg	29.8	29.8	29.9
Conversion factor (29.92/528)(0.75) ²	---	(in Hg/°R) cfm ²	0.0319	0.0319	0.0319
Average orifice meter differential	Δ H _{avg}	in. H ₂ O	1.34	1.35	1.44
Orifice meter calibration coefficient	Δ H _@	in. H ₂ O	1.84	1.84	1.84
Dry molecular weight of stack gas	M _d	lb/lb-mole	28.88	28.84	28.84
Dry molecular weight of air	---	lb/lb-mole	29.00	29.00	29.00
Specific gravity of mercury	---	Dimensionless	13.60	13.60	13.60
Average of the Sq. Root of the Δ H's	(√ΔH) _{avg}	---	1.15	1.16	1.19

$$Y_{qa} = \frac{t}{V_m} \sqrt{\frac{0.0319 T_m}{\Delta H @ \left(P_b + \frac{\Delta H_{avg}}{13.6} \right) P_b} \left(\frac{29}{M_d} \right) (\sqrt{\Delta H})_{avg}}$$

Method 5 Eq.5-15

Dry gas meter calibration check value	Y _{qa}	Dimensionless	0.9907	0.9972	0.9975
Dry gas meter calibration factor	Y	Dimensionless	0.9953	0.9953	0.9953

Average of Y _{qa} 's from test run series	0.9951
Dry gas meter calibration factor	0.9953
% difference between average Y _{qa} 's and Y (must be within ± 5%)	0.02%

Meter Pyrometer Calibration

Meter I.D.		C-17						
Temperature Calibrator Used		CL-3512-A #2						
Date		12/22/2022						
Technician		BSL						
Thermocouple I.D.		T.C. 1	T.C. 2	T.C. 3	T.C. 4	T.C. 5	T.C. 6	Meter out
Reference °F	Acceptable Range	** If not within Acceptable Range, unit not to be used within range at which failure occurred.						
1950	1932 to 1968	1956				1956	1956	
1400	1387 to 1413	1402				1403	1403	
1000	990 to 1010	1005				1005	1005	
600	593 to 607	602				602	602	
300	295 to 305	301	301	301		301	301	301
100	96 to 104	99	99	99	99	98	98	99
50	47 to 53	49	49	49	49	49	49	49
0	-3 to 3	0			0	0	0	0

Pass/Fail based on +/- 0.75% of Rankine value

Fail indicated by cell highlighting

Reviewed By:





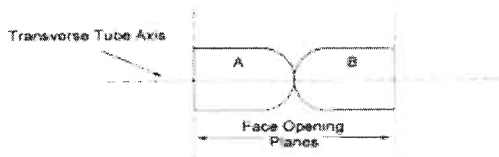
S-Type Pitot Tube Geometry Check

Pitot Tube
Number: 2-1
Length: 2'
Function: M-5 Probe Free

Inspection Date: 4/13/28
Technician: BAW

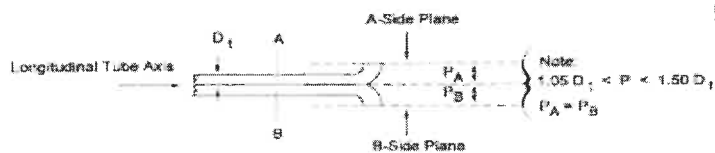
1. Are face openings perpendicular to tube axis?

☒ YES (go to 2) ☐ NO (go to 1a)



2. Are face openings parallel to longitudinal axis?

☒ YES (go to 3) ☐ NO (go to 2a)



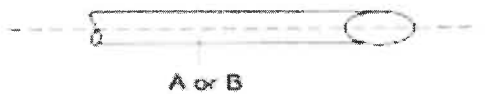
3. Are legs of equal length?

☒ YES (go to 4) ☐ NO (go to 3a)



4. Are center-lines of legs coincident?

☒ YES (go to 5) ☐ NO (go to 4a)

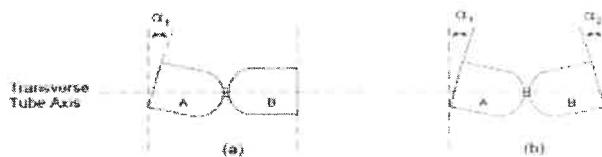


5. Does this pitot tube pass all of the above criteria?

☒ YES ☐ NO

1a. If NO, is angle less than 10°?

☐ YES (go to 2) ☐ NO (discontinue use)



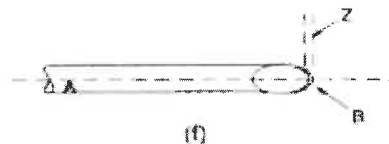
2a. If NO, is angle less than 5°?

☐ YES (go to 3) ☐ NO (discontinue use)



3a. If NO, is difference less than 1/8 inch?

☐ YES (go to 4) ☐ NO (discontinue use)



4a. If NO, are center-lines of face openings less than 1/32 inch?

☐ YES (go to 5) ☐ NO (discontinue use)



I certify that the pitot tube meets or exceeds all specifications and criteria listed in 40 CFR Part 60, Appendix A, EPA Method 2, and is assigned a pitot tube certification factor of 0.84.

Technician Signature: BAW

Reviewed by: _____



THERMOCOUPLE CALIBRATION

THERMOCOUPLE ID 2-1

Cal Date: 4/13/2023

Method 5 Probe

CALIBRATION TECHNICIAN: BAW

REFERENCE STANDARDS

Hart Scientific 9130-A s/n A1B289

Fluke 9144 s/n B5A044

Pyrometer ID

TRACEABILITY

Report No. T22-1117-TN-25

Report No. T22-1117-TN-24

D-31

DATE

11/17/2022

11/17/2022

LABORATORY

NBS Calibrations

NBS Calibrations

Temperature Calibration Points

50

250

650

Reference Deg F (To)

50

250

651

Probe Temp (deg F)

50

250

650

Reference Temp (deg R) deg F + 460

510

710

1111

Probe Temp (deg R), deg F + 460

510

710

1110

Difference (degrees)

0

0

1

% Diff Abs. T

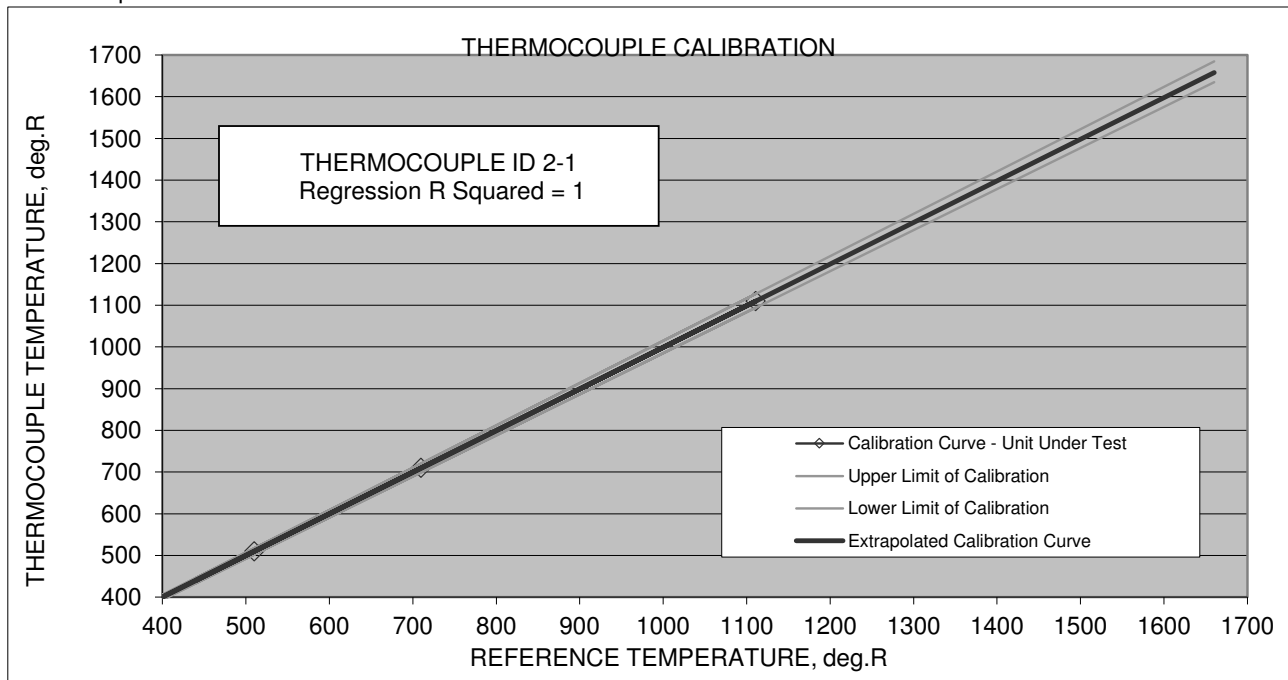
0.0%

0.0%

0.1%

Is difference less than 1.5% at all measured points?

YES



Are extrapolated limits less than 1.5%?

YES

FAHRENHEIT
CALIBRATION RANGE
-20 1200

If not acceptable, describe corrective action:

Reviewed by:

Ruby Walden



THERMOCOUPLE CALIBRATION

Meter In/out

THERMOCOUPLE ID C-17

Cal Date:

1/5/2023

CALIBRATION TECHNICIAN: RCW4

REFERENCE STANDARDS

TRACEABILITY

DATE

LABORATORY

Hart Scientific 9130-A s/n A1B289

Report No. T22-1117-TN-25

11/17/2022

NBS Calibrations

Fluke 9144 s/n B5A044

Report No. T22-1117-TN-24

11/17/2022

NBS Calibrations

Pyrometer ID

D-27

Temperature Calibration Points	32	70	150
Reference Deg F (To)	32	70	150
Probe Temp (deg F)	32.8	70.0	149.0
Difference (degrees)	0.8	0.0	1.0
TC Meets Method 5 Specifications: (± 2.0 °F)			
	YES	YES	YES

Reviewed by:



THERMOCOUPLE CALIBRATION

M23 Sorbent TC

THERMOCOUPLE ID M23-4

Cal Date: 1/6/2023

CALIBRATION TECHNICIAN: BSL

REFERENCE STANDARDS

Hart Scientific 9130-A s/n A1B289

Fluke 9144 s/n B5A044

Pyrometer ID

TRACEABILITY

Report No. T22-1117-TN-25

Report No. T22-1117-TN-24

D-16

DATE

11/17/2022

11/17/2022

LABORATORY

NBS Calibrations

Temperature Calibration Points

32

70

150

Reference Deg F (To)

32

70

150

Probe Temp (deg F)

33.4

70.8

150.8

Difference (degrees)

1.4

0.8

0.8

TC Meets Method 5 Specifications: (± 2.0 °F)

YES

YES

YES

Reviewed by:



THERMOCOUPLE CALIBRATION

M23 Sorbent TC

THERMOCOUPLE ID M23-5

Cal Date: 1/6/2023

CALIBRATION TECHNICIAN: BSL

REFERENCE STANDARDS

Hart Scientific 9130-A s/n A1B289

Fluke 9144 s/n B5A044

Pyrometer ID

TRACEABILITY

Report No. T22-1117-TN-25

Report No. T22-1117-TN-24

D-16

DATE

11/17/2022

11/17/2022

LABORATORY

NBS Calibrations

Temperature Calibration Points

32

70

150

Reference Deg F (To)

32

70

150

Probe Temp (deg F)

33.4

70.8

150.8

Difference (degrees)

1.4

0.8

0.8

TC Meets Method 5 Specifications: (± 2.0 °F)

YES

YES

YES

Reviewed by:



THERMOCOUPLE CALIBRATION

M23 Sorbent TC

THERMOCOUPLE ID M23-11

Cal Date:

1/6/2023

CALIBRATION TECHNICIAN: BSL

REFERENCE STANDARDS

Hart Scientific 9130-A s/n A1B289

Fluke 9144 s/n B5A044

Pyrometer ID

TRACEABILITY

Report No. T22-1117-TN-25

Report No. T22-1117-TN-24

D-16

DATE

11/17/2022

11/17/2022

LABORATORY

NBS Calibrations

Temperature Calibration Points

32

70

150

Reference Deg F (To)

32

70

150

Probe Temp (deg F)

33.1

70.9

150.8

Difference (degrees)

1.1

0.9

0.8

TC Meets Method 5 Specifications: (± 2.0 °F)

YES

YES

YES

Reviewed by:



THERMOCOUPLE CALIBRATION

M23 Sorbent TC

THERMOCOUPLE ID M23-14

Cal Date:

1/6/2023

CALIBRATION TECHNICIAN: BSL

REFERENCE STANDARDS

Hart Scientific 9130-A s/n A1B289

Fluke 9144 s/n B5A044

Pyrometer ID

TRACEABILITY

Report No. T22-1117-TN-25

Report No. T22-1117-TN-24

D-16

DATE

11/17/2022

11/17/2022

LABORATORY

NBS Calibrations

Temperature Calibration Points

32

70

150

Reference Deg F (To)

32

70

150

Probe Temp (deg F)

32.5

70.8

149.6

Difference (degrees)

0.5

0.8

0.4

TC Meets Method 5 Specifications: (± 2.0 °F)

YES

YES

YES

Reviewed by:



THERMOCOUPLE CALIBRATION

M5 Filter Outlet TC

THERMOCOUPLE ID M5 FO 6

Cal Date: 1/6/2023

CALIBRATION TECHNICIAN: BSL

REFERENCE STANDARDS

TRACEABILITY

DATE

LABORATORY

Hart Scientific 9130-A s/n A1B289

Report No. T22-1117-TN-25

11/17/2022

NBS Calibrations

Fluke 9144 s/n B5A044

Report No. T22-1117-TN-24

11/17/2022

NBS Calibrations

Pyrometer ID

D-16

Temperature Calibration Points

50

250

400

Reference Deg F (To)

50

250

400

Probe Temp (deg F)

52

250

399

Difference (degrees) abs

2.0

0.0

1.0

Is All Difference less than 5.4 Degrees

F?

YES

Pass Calibration?

Reviewed by:

Ruby Walden



THERMOCOUPLE CALIBRATION

M5 Filter Outlet TC

THERMOCOUPLE ID M5 FO 9

Cal Date: 1/6/2023

CALIBRATION TECHNICIAN: BSL

REFERENCE STANDARDS

Hart Scientific 9130-A s/n A1B289

Fluke 9144 s/n B5A044

Pyrometer ID

TRACEABILITY

Report No. T22-1117-TN-25

Report No. T22-1117-TN-24

D-16

DATE

11/17/2022

11/17/2022

LABORATORY

NBS Calibrations

NBS Calibrations

Temperature Calibration Points

50

250

400

Reference Deg F (To)

50

250

400

Probe Temp (deg F)

50

249

397

Difference (degrees) abs

0.0

1.0

3.0

Is All Difference less than 5.4 Degrees

F?

YES

Pass Calibration?

Reviewed by: *Ruby Walden*



THERMOCOUPLE CALIBRATION

Impinger Outlet

THERMOCOUPLE ID TIO-9122

Cal Date: 1/16/2023

CALIBRATION TECHNICIAN: BSL

REFERENCE STANDARDS

Hart Scientific 9130-A s/n A1B289

Fluke 9144 s/n B5A044

Pyrometer ID

TRACEABILITY

Report No. T22-1117-TN-25

Report No. T22-1117-TN-24

D-16

DATE

11/17/2022

11/17/2022

LABORATORY

NBS Calibrations

NBS Calibrations

Temperature Calibration Points

32

70

150

Reference Deg F (To)

32

70

150

Probe Temp (deg F)

33.1

70.5

150.2

Difference (degrees)

1.1

0.5

0.2

TC Meets Method 5 Specifications: (± 2.0 °F)

YES

YES

YES

Reviewed by:

Nozzle Calibration
Extruder Exhaust ()

Nozzle Calibration

Nozzle No.

Glass

Used for Runs:

1

 -

3

Point Measurement, inches

1	0.250
2	0.250
3	0.250
Average	0.250

Test Date 4/18/2023
Date Measured: 4/18/2023
Technician: TMR

Method 4 Balance Check
Extruder Exhaust ()

EPA Method 4 Balance Check

Class II Weight Amount =	1000.0
Balance Response=	999.7
Difference	0.3
Pass	PASS

Test Date 4/18/2023
Date Measured: 4/18/2023
Technician: TMR



Field Barometer Calibration
Calibration to PRINCO Mercury Barometer
Barr Engineering Co. Edina Field Office

			Reference, PRINCO	Field Barometer				
Date	Technician	Observation Time	Station Pressure	ID	Barometric Pressure	Condition	Remarks	Offset tolerance +/- 0.10
4/13/23	TMR	1441	28.71	BA-04	28.70	In Calibration	AS found	-0.01
6/5/23	TMR	1500	29.21	BA-04	29.20	In Calibration	As Found	-0.01

Appendix E

Project Participants and Contact Information

Project Participants and Contact Information

Zeus Industrial Products, Inc.

Chris Given – Environmental and Sustainability Manager

Barr Engineering Co.

Tim Russell – Vice President/Senior Chemical Engineer

Ben Wiltse – Project Manager

Ruby Walden – Air Quality Technician

CONTACT INFORMATION

Zeus Industrial Products, Inc. Chris Given Environmental and Sustainability Manager Zeus Industrial Products, Inc. 3737 Industrial Blvd Orangeburg, SC 29118 [Redacted] [Redacted]@zeusinc.com	Barr Engineering Co. Tim Russell Vice President/Senior Chemical Engineer Barr Engineering Co. 4300 MarketPointe Drive, Suite 200 Minneapolis, MN 55435 [Redacted] [Redacted]@barr.com
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