Source Test Report

The Chemours Company
22828 Highway 87W
Fayetteville, NC 28306

Source Tested: PPA Carbon Bed Adsorber
Test Date: May 6, 2021

AST Project No. 2021-1324O

Prepared By
Alliance Source Testing, LLC
7600 Morgan Road
Liverpool, NY 13090

CORPORATE OFFICE
255 Grant St. SE, Suite 600
Decatur, AL 35601
(256) 351-0121

SOURCE TESTING
stacktest.com

EMISSIONS MONITORING
alliance-em.com

ANALYTICAL SERVICES
allianceanalyticalservices.com

Regulatory Information

Permit No. Title V Air Permit No. 03735T48

Source Information

Source Name	*Target Parameter*
PPA Carbon Bed Adsorber	HFPO-DA

Contact Information

Test Location
The Chemours Company
22828 Highway 87W
Fayetteville, NC 28306

Facility Contact
Christel Compton
Christel.e.compton@chemours.com

Test Company
Alliance Source Testing, LLC
7600 Morgan Road
Liverpool, NY 13090

Project Manager/
Field Team Leader
Patrick Grady
patrick.grady@stacktest.com
(716) 713-9238

QA/QC Manager
Heather Morgan
heather.morgan@stacktest.com
(256) 260-3972

Report Coordinator
Jarrett Vickers
jarrett.vickers@stacktest.com
(256) 351-0121

Analytical Laboratory
Eurofins TestAmerica
5815 Middlebrook Pike
Knoxville, TN 37921
Courtney Adkins
Courtney.adkins@testamericainc.com
(865) 291-3000

Alliance Source Testing, LLC (AST) has completed the source testing as described in this report. Results apply only to the source(s) tested and operating condition(s) for the specific test date(s) and time(s) identified within this report. All results are intended to be considered in their entirety, and AST is not responsible for use of less than the complete test report without written consent. This report shall not be reproduced in full or in part without written approval from the customer.

To the best of my knowledge and abilities, all information, facts and test data are correct. Data presented in this report has been checked for completeness and is accurate, error-free and legible. Onsite testing was conducted in accordance with approved internal Standard Operating Procedures. Any deviations or problems are detailed in the relevant sections on the test report.

This report is only considered valid once an authorized representative of AST has signed in the space provided below; any other version is considered draft. This document was prepared in portable document format (.pdf) and contains pages as identified in the bottom footer of this document.

7/16/2021

Patrick Grady, QSTI
Project Manager/Field Team Leader
Alliance Source Testing, LLC

Date

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

Introduction

1.0 Introduction

Alliance Source Testing, LLC (AST) was retained by Ramboll Americas Engineering Solutions, Inc. (Ramboll) to conduct compliance testing at The Chemours Company facility located in Fayetteville, North Carolina. The facility operates under Chemours' Title V Air Permit No. 03735T48. Testing was conducted to determine the emission rate of hexafluoro-propylene oxide-dimer acid (HFPO-DA) from the PPA carbon bed adsorber.

1.1 Source and Control System Descriptions

The PPA facility produces surfactants used to produce fluoropolymer products, such as Teflon® at other Chemours facilities, as well as sales to outside producers of fluoropolymers. Process streams are vented to a caustic wet scrubber (ACD-A1), a carbon bed and exhausted through a process stack (AEP-A1). The process inside the building is under negative pressure and the building air is vented to the carbon bed and the process stack (AEP-A1).

1.2 Project Team

Personnel involved in this project are identified in the following table.

Table 1-1
Project Team

Facility Personnel	Chase Forman
DAQ Personnel	Gary Saunders
Ramboll Personnel	Chase Forman
AST Personnel	Patrick Grady Antonio Anderson Brian Goodhile Steven Milo Jeffrey Sheldon

Summary of Results

2.0 Summary of Results

AST conducted compliance testing at the Chemours facility in Fayetteville, North Carolina on May 6, 2021. Testing consisted of determining the emission rate of hexafluoro-propylene oxide-dimer acid (HFPO-DA) from the PPA carbon bed adsorber.

Table 2-1 provides a summary of the emission testing results. Any difference between the summary results listed in the following table and the detailed results contained in appendices is due to rounding for presentation.

Table 2-1
Summary of Results

Run Number	Run 1	Run 2	Run 3	Average
Date	**5/6/21**	**5/6/21**	**5/6/21**	**--**
HFPO-DA Data				
Outlet Emission Rate, lb/hr	6.0E-05	1.5E-05	3.1E-05	3.5E-05
Inlet Emission Rate, lb/hr	8.3E-03	9.5E-03	7.4E-03	8.4E-03
Reduction Efficiency, %	99.3	99.8	99.6	99.6

Testing Methodology

3.0 Testing Methodology

The emission testing program was conducted in accordance with the test methods listed in Table 3-1. Method descriptions are provided below while quality assurance/quality control data is provided in Appendix D.

Table 3-1
Source Testing Methodology

Parameter	U.S. EPA Reference Test Methods	Notes/Remarks
Volumetric Flow Rate	1 & 2	Full Velocity Traverses
Moisture Content	4	Volumetric / Gravimetric Analysis
HFPO-DA	OTM-45	Isokinetic Sampling

3.1 U.S. EPA Reference Test Methods 1 and 2 – Sampling/Traverse Points and Volumetric Flow Rate

The sampling location and number of traverse (sampling) points were selected in accordance with U.S. EPA Reference Test Method 1. To determine the minimum number of traverse points, the upstream and downstream distances were equated into equivalent diameters and compared to Figure 1-1 in U.S. EPA Reference Test Method 1.

Full velocity traverses were conducted in accordance with U.S. EPA Reference Test Method 2 to determine the average stack gas velocity pressure, static pressure and temperature. The velocity and static pressure measurement system consisted of a pitot tube and inclined manometer. The stack gas temperature was measured with a K-type thermocouple and pyrometer.

The O_2 and CO_2 concentration were assumed to be ambient for molecular weight and volumetric flow rate calculations.

3.2 U.S. EPA Reference Test Method 4 – Moisture Content

The stack gas moisture content was determined in accordance with U.S. EPA Reference Test Method 4. The gas conditioning train consisted of a series of chilled impingers. Prior to testing, each impinger was filled with a known quantity of water or silica gel. Each impinger was analyzed gravimetrically before and after each test run on the same balance to determine the amount of moisture condensed.

3.3 U.S. EPA Other Test Method (OTM) 45 - HFPO-DA

HFPO-DA emissions were evaluated in accordance with Other Test Method (OTM) 45. The sample train consisted of a borosilicate glass nozzle attached directly to a heated borosilicate glass-lined probe. The probe was connected directly to a heated borosilicate glass filter holder containing a solvent-extracted glass fiber filter. In order to minimize possible thermal degradation of the HFPO-DA, the probe and particulate filter were heated to just above stack temperature to minimize water vapor condensation before the filter. The filter holder exit was connected to a water-cooled coil condenser followed by a water-cooled sorbent module containing approximately 40 grams of XAD-2 resin. The XAD-2 inlet temperature was monitored to ensure that the module is maintained at a temperature below 20°C.

The XAD-2 resin trap was followed by a condensate knockout impinger and a series of two impingers each containing 100-ml of high purity deionized water. The water impingers were followed by another condensate knockout impinger equipped with a second XAD-2 resin trap to account for any sample breakthrough. The final impinger contained approximately 250 grams of dry pre-weighed silica gel. The water impingers and condensate impingers were submerged in an ice bath through the duration of the testing. The water in the ice bath was also used to circulate around the coil condenser and the XAD-2 resin traps.

Exhaust gases were extracted from the sample locations isokinetically using a metering console equipped with a vacuum pump, a calibrated orifice, oil manometer and probe/filter heat controllers.

3.4 HFPO-DA Sample Train and Equipment Preparation

Prior to conducting the field work the following procedures were conducted to prepare the field sampling glassware and sample recovery tools.

1. Wash all glassware, brushes, and ancillary tools with low residue soap and hot water.
2. Rinse all glassware, brushes, and ancillary tools three (3) times with D.I. H_20.
3. Bake glassware (with the exception of probe liners) at 450˚C for approximately 2 hours, (XAD-2 resin tube glassware is cleaned by Eurofins/TestAmerica by this same procedure).
4. Solvent rinse three (3) times all glassware, brushes, and ancillary tools with the following sequence of solvents: acetone, methylene chloride, hexane, and methanol.
5. Clean glassware and tools will be sealed in plastic bags or aluminum foil for transport to the sampling site.
6. Squirt bottles will be new dedicated bottles of known history and dedicated to the D.I. Water and methanol/ammonium hydroxide (MeOH/ 5% NH_4OH) solvent contents. Squirt bottles will be labelled with the solvent content it contains.

3.5 HFPO-DA Sample Train Recovery

Following completion of each test run, the sample probe, nozzle and front-half of the filter holder were brushed and rinsed three times each with the MeOH/ 5% NH_4OH solution (Container #1). The glass fiber filter was removed from its housing and transferred to a polyethylene bottle (Container #2). Any particulate matter and filter fibers which adhered to the filter holder and gasket were also placed in Container #2. The XAD-2 resin trap was sealed, labelled and placed in an iced sample cooler. The back-half of the filter holder, coil condenser condensate trap and connecting glassware were rinsed with the same MeOH/ 5% NH_4OH solution and placed in Container #3.

The volume of water collected in the second and third impingers was measured for moisture determinations and then placed in Container #4. Impingers #2 and #3 were then rinsed with the MeOH/ 5% NH_4OH solution and placed in Container #5. The second (breakthrough) XAD-2 resin trap was sealed, labelled and placed in an iced sample cooler. The second condensate trap was rinsed with the MeOH/ 5% NH_4OH solution and placed in Container #5. The contents of the fifth impinger were placed in its original container and weighed for moisture determinations.

Containers were sealed and labeled with the appropriate sample information. Samples remained chilled until analysis. HFPO-DA analysis was conducted using liquid chromatography/dual mass spectrometry (LC/MS/MS).

Appendix A

Location: Ramboll - Chemours Fayetteville Works Facility, NC
Source: PPA Carbon Bed Outlet
Project No.: 2021-1324O
Run No.: 1
Parameter: HFPO-DA

Meter Pressure (Pm), in. Hg

$$Pm = Pb + \frac{\Delta H}{13.6}$$

where,

Pb	30.00	= barometric pressure, in. Hg
ΔH	1.635	= pressure differential of orifice, in H_2O
Pm	30.12	= in. Hg

Absolute Stack Gas Pressure (Ps), in. Hg

$$Ps = Pb + \frac{Pg}{13.6}$$

where,

Pb	30.00	= barometric pressure, in. Hg
Pg	2.00	= static pressure, in. H_2O
Ps	30.15	= in. Hg

Standard Meter Volume (Vmstd), dscf

$$Vmstd = \frac{17.636 \times Y \times Vm \times Pm}{Tm}$$

where,

Y	0.992	= meter correction factor
Vm	70.270	= meter volume, cf
Pm	30.12	= absolute meter pressure, in. Hg
Tm	532.5	= absolute meter temperature, ^oR
Vmstd	69.543	= dscf

Standard Wet Volume (Vwstd), scf

$$Vwstd = 0.04716 \times Vlc$$

where,

Vlc	28	= volume of H_2O collected, ml
Vwstd	1.320	= scf

Moisture Fraction (BWSsat), dimensionless (theoretical at saturated conditions)

$$BWSsat = \frac{10^{6.37-\left(\frac{2,827}{Ts+365}\right)}}{Ps}$$

where,

Ts	73.2	= stack temperature, °F
Ps	30.15	= absolute stack gas pressure, in. Hg
BWSsat	0.027	= dimensionless

Moisture Fraction (BWS), dimensionless (measured)

$$BWS = \frac{Vwstd}{(Vwstd + Vmstd)}$$

where,

Vwstd	1.320	= standard wet volume, scf
Vmstd	69.543	= standard meter volume, dscf
BWS	0.019	= dimensionless

Alliance SOURCE TESTING

Location: Ramboll - Chemours Fayetteville Works Facility, NC
Source: PPA Carbon Bed Outlet
Project No.: 2021-1324O
Run No.: 1
Parameter: HFPO-DA

Moisture Fraction (BWS), dimensionless

$$BWS = BWSmsd \text{ unless } BWSsat < BWSmsd$$

where,

BWSsat	0.027	= moisture fraction (theoretical at saturated conditions)
BWSmsd	0.019	= moisture fraction (measured)
BWS	0.019	

Molecular Weight (DRY) (Md), lb/lb-mole

$$Md = (0.44 \times \%\,CO_2) + (0.32 \times \%\,O2) + (0.28\,(100 - \%\,CO_2 - \%\,O2))$$

where,

CO_2	0.1	= carbon dioxide concentration, %
O_2	20.9	= oxygen concentration, %
Md	28.85	= lb/lb mol

Molecular Weight (WET) (Ms), lb/lb-mole

$$Ms = Md\ (1 - BWS) + 18.015\ (BWS)$$

where,

Md	28.85	= molecular weight (DRY), lb/lb mol
BWS	0.019	= moisture fraction, dimensionless
Ms	28.65	= lb/lb mol

Average Velocity (Vs), ft/sec

$$Vs = 85.49 \times Cp \times (\Delta P^{1/2})\,avg \times \sqrt{\frac{Ts}{Ps \times Ms}}$$

where,

Cp	0.840	= pitot tube coefficient
$\Delta P^{1/2}$	0.598	= velocity head of stack gas, $(\text{in. } H_2O)^{1/2}$
Ts	532.9	= absolute stack temperature, °R
Ps	30.15	= absolute stack gas pressure, in. Hg
Ms	28.65	= molecular weight of stack gas, lb/lb mol
Vs	33.7	= ft/sec

Average Stack Gas Flow at Stack Conditions (Qa), acfm

$$Qa = 60 \times Vs \times As$$

where,

Vs	33.7	= stack gas velocity, ft/sec
As	4.91	= cross-sectional area of stack, ft^2
Qa	9,933	= acfm

Average Stack Gas Flow at Standard Conditions (Qs), dscfm

$$Qs = 17.636 \times Qa \times (1 - BWS) \times \frac{Ps}{Ts}$$

where,

Qa	9,933	= average stack gas flow at stack conditions, acfm
BWS	0.019	= moisture fraction, dimensionless
Ps	30.15	= absolute stack gas pressure, in. Hg
Ts	532.9	= absolute stack temperature, °R
Qs	9,726	= dscfm

Location:	**Ramboll - Chemours Fayetteville Works Facility, NC**
Source:	**PPA Carbon Bed Outlet**
Project No.:	**2021-1324O**
Run No.:	**1**
Parameter:	**HFPO-DA**

Dry Gas Meter Calibration Check (Yqa), dimensionless

$$Yqa = \frac{Y - \left(\frac{\Theta}{Vm} \sqrt{\frac{0.0319 \times Tm \times 29}{\Delta H@ \times \left(Pb + \frac{\Delta Havg.}{13.6} \right) \times Md}} \sqrt{\Delta H}\ avg. \right)}{Y} \times 100$$

where,

Y	0.992	= meter correction factor, dimensionless
Θ	96	= run time, min.
Vm	70.27	= total meter volume, dcf
Tm	532.5	= absolute meter temperature, °R
ΔH@	1.65	= orifice meter calibration coefficient, in. H_2O
Pb	30.00	= barometric pressure, in. Hg
ΔH avg	1.635	= average pressure differential of orifice, in H_2O
Md	28.85	= molecular weight (DRY), lb/lb mol
$(\Delta H)^{1/2}$	1.271	= average squareroot pressure differential of orifice, $(in. H2O)^{1/2}$
Yqa	-2.6	= dimensionless

Volume of Nozzle (Vn), ft^3

$$Vn = \frac{Ts}{Ps} \left(0.002669 \times Vlc + \frac{Vm \times Pm \times Y}{Tm} \right)$$

where,

Ts	532.9	= absolute stack temperature, °R
Ps	30.15	= absolute stack gas pressure, in. Hg
Vlc	28.0	= volume of H_2O collected, ml
Vm	70.270	= meter volume, cf
Pm	30.12	= absolute meter pressure, in. Hg
Y	0.992	= meter correction factor, unitless
Tm	532.5	= absolute meter temperature, °R
Vn	71.021	= volume of nozzle, ft^3

Isokinetic Sampling Rate (I), %

$$I = \left(\frac{Vn}{\theta \times 60 \times An \times Vs} \right) \times 100$$

where,

Vn	71.021	= nozzle volume, ft3
θ	96.0	= run time, minutes
An	0.00037	= area of nozzle, ft^2
Vs	33.7	= average velocity, ft/sec
I	97.7	= %

Alliance SOURCE TESTING

Location: Ramboll - Chemours Fayetteville Works Facility, NC
Source: PPA Carbon Bed Outlet
Project No.: 2021-1324O
Run No.: 1
Parameter: HFPO-DA

HFPO-DA Concentration (C_{HFPODA}), ng/dscm

$$C_{HPFODA} = \frac{M_n}{}$$

where,

Mn	3,218.5	= HFPO-DA mass, ng
Vmstd	69.543	= standard meter volume, dscf
$C_{(HFPODA)}$	1.6E+03	= ng/dscm

HFPO-DA Emission Rate (PMR), lb/hr

$$\text{PMR} = \frac{C_s \times Qs \times 60}{7.0E+03}$$

where,

$C_{(HFPODA)}$	1.6E+03	= HFPO-DA concentration, ng/dscm
Qs	9,726	= average stack gas flow at standard conditions, dscfm
$ER_{(HFPODA)}$	6.0E-05	= lb/hr

Appendix B

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Outlet
Project No. 2021-1324O
Parameter HFPO-DA

Run Number		Run 1	Run 2	Run 3	Average
Date		5/6/21	5/6/21	5/6/21	--
Start Time		9:13	11:42	14:00	--
Stop Time		11:06	13:32	15:45	--
Run Time, min	(θ)	96.0	96.0	96.0	96.0
INPUT DATA					
Barometric Pressure, in. Hg	(Pb)	30.00	30.00	30.00	30.00
Meter Correction Factor	(Y)	0.992	0.992	0.992	0.992
Orifice Calibration Value	(ΔH @)	1.650	1.650	1.650	1.650
Meter Volume, ft^3	(Vm)	70.270	76.793	77.579	74.881
Meter Temperature, °F	(Tm)	72.8	85.0	89.8	82.5
Meter Temperature, °R	(Tm)	532.5	544.7	549.4	542.2
Meter Orifice Pressure, in. WC	(ΔH)	1.635	1.890	1.929	1.818
Volume H_2O Collected, mL	(Vlc)	28.0	32.2	28.6	29.6
Nozzle Diameter, in	(Dn)	0.262	0.262	0.262	0.262
Area of Nozzle, ft^2	(An)	0.0004	0.0004	0.0004	0.0004
FH HFPO-DA Mass, ng	$M_{(HFPODA)}$	842.0	580.0	435.0	619.0
BH HFPO-DA Mass, ng	$M_{(HFPODA)}$	2,280.0	117.0	1,160.0	1,185.7
Imp HFPO-DA Mass, ng	$M_{(HFPODA)}$	89.9	106.0	106.0	100.6
Breakthrough HFPO-DA Mass, ng	$M_{(HFPODA)}$	6.6	3.6	7.2	5.8
Total HFPO-DA Mass, ng	$M_{(HFPODA)}$	3,218.5	806.6	1,708.2	1,911.1
ISOKINETIC DATA					
Standard Meter Volume, ft^3	(Vmstd)	69.543	74.338	74.457	72.779
Standard Water Volume, ft^3	(Vwstd)	1.320	1.519	1.348	1.396
Moisture Fraction Measured	(BWSmsd)	0.019	0.020	0.018	0.019
Moisture Fraction @ Saturation	(BWSsat)	0.027	0.031	0.033	0.030
Moisture Fraction	(BWS)	0.019	0.020	0.018	0.019
Meter Pressure, in Hg	(Pm)	30.12	30.14	30.14	30.13
Volume at Nozzle, ft^3	(Vn)	71.021	76.506	76.745	74.76
Isokinetic Sampling Rate, (%)	(I)	97.7	98.7	98.3	98.2
DGM Calibration Check Value, (+/- 5%)	(Y_{qa})	-2.6	-2.2	-2.8	-2.5
EMISSION CALCULATIONS					
HFPO-DA Concentration, ng/dscm	$C_{(HFPODA)}$	1.6E+03	3.8E+02	8.1E+02	9.4E+02
HFPO-DA Emission Rate, lb/hr	$ER_{(HFPODA)}$	6.0E-05	1.5E-05	3.1E-05	3.5E-05
REDUCTION CALCULATIONS					
Inlet HFPO-DA Emission Rate, lb/hr	$ER_{(HFPODA)}$	8.3E-03	9.5E-03	7.4E-03	8.4E-03
HFPO-DA Reduction Efficiency, %	$ER_{(HFPODA)}$	99.3	99.8	99.6	99.6

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Outlet
Project No. 2021-1324O
Parameter HFPO-DA

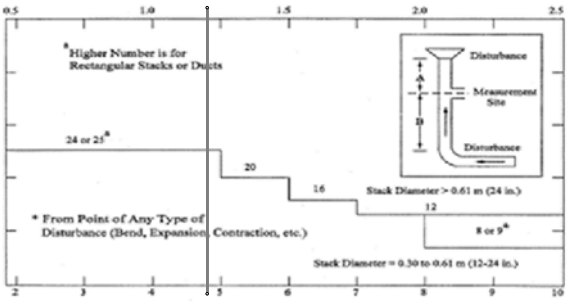
Run Number		Run 1	Run 2	Run 3	Average
Date		5/6/21	5/6/21	5/6/21	--
Start Time		9:13	11:42	14:00	--
Stop Time		11:06	13:32	15:45	--
Run Time, min		96.0	96.0	96.0	96.0
VELOCITY HEAD, in. WC					
Point 1		0.18	0.26	0.24	0.23
Point 2		0.18	0.28	0.33	0.26
Point 3		0.33	0.43	0.38	0.38
Point 4		0.34	0.43	0.41	0.39
Point 5		0.34	0.42	0.42	0.39
Point 6		0.38	0.46	0.45	0.43
Point 7		0.38	0.48	0.46	0.44
Point 8		0.42	0.46	0.45	0.44
Point 9		0.42	0.48	0.45	0.45
Point 10		0.40	0.44	0.44	0.43
Point 11		0.40	0.44	0.42	0.42
Point 12		0.40	0.40	0.42	0.41
Point 13		0.22	0.21	0.24	0.22
Point 14		0.31	0.32	0.41	0.35
Point 15		0.37	0.36	0.42	0.38
Point 16		0.40	0.38	0.43	0.40
Point 17		0.40	0.42	0.44	0.42
Point 18		0.40	0.44	0.44	0.43
Point 19		0.42	0.46	0.45	0.44
Point 20		0.41	0.46	0.45	0.44
Point 21		0.39	0.45	0.44	0.43
Point 22		0.39	0.44	0.44	0.42
Point 23		0.40	0.42	0.42	0.41
Point 24		0.40	0.42	0.40	0.41
CALCULATED DATA					
Square Root of ΔP, $(\text{in. WC})^{1/2}$	(ΔP)	0.598	0.635	0.639	0.624
Pitot Tube Coefficient	(Cp)	0.840	0.840	0.840	0.840
Barometric Pressure, in. Hg	(Pb)	30.00	30.00	30.00	30.00
Static Pressure, in. WC	(Pg)	2.00	2.20	2.20	2.13
Stack Pressure, in. Hg	(Ps)	30.15	30.16	30.16	30.16
Stack Cross-sectional Area, ft^2	(As)	4.91	4.91	4.91	4.91
Temperature, °F	(Ts)	73.2	76.8	78.9	76.3
Temperature, °R	(Ts)	532.9	536.5	538.5	535.976
Moisture Fraction Measured	(BWSmsd)	0.019	0.020	0.018	0.019
Moisture Fraction @ Saturation	(BWSsat)	0.027	0.031	0.033	0.030
Moisture Fraction	(BWS)	0.019	0.020	0.018	0.019
O_2 Concentration, %	(O_2)	20.9	20.9	20.9	20.9
CO_2 Concentration, %	(CO_2)	0.1	0.1	0.1	0.1
Molecular Weight, lb/lb-mole (dry)	(Md)	28.85	28.85	28.85	28.85
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.65	28.64	28.66	28.65
Velocity, ft/sec	(Vs)	33.7	35.9	36.2	35.3
VOLUMETRIC FLOW RATE					
At Stack Conditions, acfm	(Qa)	9,933	10,584	10,663	10,393
At Standard Conditions, dscfm	(Qs)	9,726	10,284	10,344	10,118

Method 1 Data

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Outlet
Project No. 2021-1324O
Date: 05/06/21

Stack Parameters

Duct Orientation:	Vertical	
Duct Design:	Circular	
Distance from Far Wall to Outside of Port:	46.00	in
Nipple Length:	16.00	in
Depth of Duct:	30.00	in
Cross Sectional Area of Duct:	4.91	ft^2
No. of Test Ports:	2	
Distance A:	32.0	ft
Distance A Duct Diameters:	12.8	(must be > 0.5)
Distance B:	12.0	ft
Distance B Duct Diameters:	4.8	(must be > 2)
Minimum Number of Traverse Points:	24	
Actual Number of Traverse Points:	24	
Number of Readings per Point:	1	



CIRCULAR DUCT

LOCATION OF TRAVERSE POINTS

Number of traverse points on a diameter

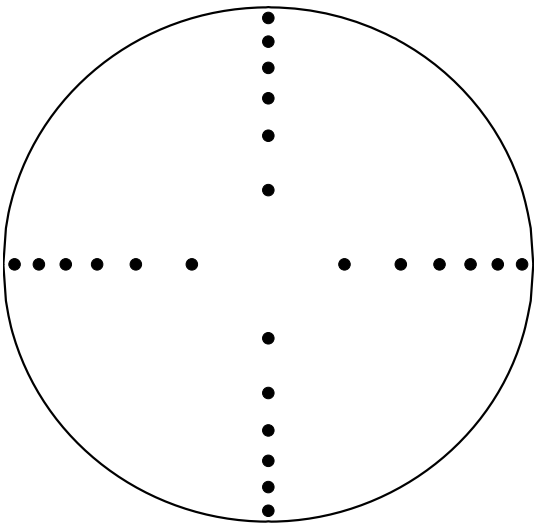
	2	3	4	5	6	7	8	9	10	11	12
1	14.6	--	6.7	--	4.4	--	3.2	--	2.6	--	2.1
2	85.4	--	25.0	--	14.6	--	10.5	--	8.2	--	6.7
3	--	--	75.0	--	29.6	--	19.4	--	14.6	--	11.8
4	--	--	93.3	--	70.4	--	32.3	--	22.6	--	17.7
5	--	--	--	--	85.4	--	67.7	--	34.2	--	25.0
6	--	--	--	--	95.6	--	80.6	--	65.8	--	35.6
7	--	--	--	--	--	--	89.5	--	77.4	--	64.4
8	--	--	--	--	--	--	96.8	--	85.4	--	75.0
9	--	--	--	--	--	--	--	--	91.8	--	82.3
10	--	--	--	--	--	--	--	--	97.4	--	88.2
11	--	--	--	--	--	--	--	--	--	--	93.3
12	--	--	--	--	--	--	--	--	--	--	97.9

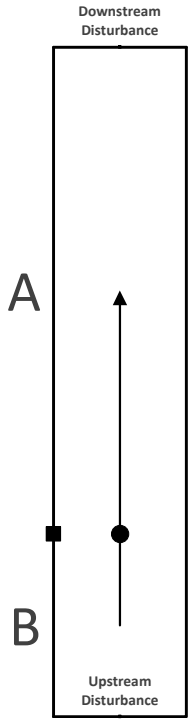
**Percent of stack diameter from inside wall to traverse point.*

Traverse Point	% of Diameter	Distance from inside wall	Distance from outside of port
1	2.1	1.00	17.00
2	6.7	2.01	18.01
3	11.8	3.54	19.54
4	17.7	5.31	21.31
5	25.0	7.50	23.50
6	35.6	10.68	26.68
7	64.4	19.32	35.32
8	75.0	22.50	38.50
9	82.3	24.69	40.69
10	88.2	26.46	42.46
11	93.3	27.99	43.99
12	97.9	29.00	45.00

Stack Diagram
A = 32 ft.
B = 12 ft.
Depth of Duct = 30 in.

Cross Sectional Area





Cyclonic Flow Check

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Outlet
Project No. 2021-1324O
Date 05/06/21

Sample Point	Angle (ΔP=0)
1	10
2	8
3	8
4	8
5	5
6	5
7	10
8	12
9	12
10	10
11	10
12	10
13	8
14	5
15	5
16	5
17	8
18	8
19	8
20	12
21	12
22	10
23	10
24	10
Average	9

Method 4 Data

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Outlet
Project No. 2021-1324O
Parameter HFPO-DA
Analysis Gravimetric

Run 1	Date:	5/6/21							
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	Empty	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	0.0	834.6	1134.6
Final Mass, g	0.0	4.0	102.0	100.0	100.0	4.0	0.0	852.6	1162.6
Gain	0.0	4.0	2.0	0.0	0.0	4.0	0.0	18.0	28.0
Run 2	**Date:**	5/6/21							
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	Empty	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	0.0	855.6	1155.6
Final Mass, g	0.0	4.0	104.0	100.0	102.0	2.0	0.0	875.8	1187.8
Gain	0.0	4.0	4.0	0.0	2.0	2.0	0.0	20.2	32.2
Run 3	**Date:**	5/6/21							
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	Empty	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	0.0	844.2	1144.2
Final Mass, g	0.0	4.0	102.0	102.0	100.0	2.0	0.0	862.8	1172.8
Gain	0.0	4.0	2.0	2.0	0.0	2.0	0.0	18.6	28.6

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	9:13	**Source:**	PPA Carbon Bed Outlet	
Date:	5/6/21	Run 1 VALID	**End Time:**	11:06	**Project No.:**	2021-1324O	**Parameter:** HFPO-DA

STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA
Moisture:	1.0	% est.	Meter Box ID:	11		Est. Tm:	88	°F	OTM-45	Pb:	30.00	in. Hg	Vlc (ml)
Barometric:	30.04	in. Hg	Y:	0.992		Est. Ts:	82	°F		Pg:	2.00	in. WC	28.0
Static Press:	2.00	in. WC	ΔH @ (in.WC):	1.650		Est. ΔP:	0.44	in. WC		O_2:	20.9	%	K-FACTOR
Stack Press:	30.19	in. Hg	Probe ID:	P4-1		Est. Dn:	0.246	in.		CO_2:	0.1	%	4.624
CO_2:	0.0	%	Liner Material:	glass		Target Rate:	0.75	scfm					
O_2:	20.9	%	Pitot ID:	P4-1		LEAK CHECKS	Pre	Mid 1	Mid 2 / Mid 3	Post	Check Pt.	Initial	Final / Corr.
N_2/CO:	79.1	%	Pitot Cp/Type:	0.840	S-type	Leak Rate (cfm):	0.008	--	-- / --	0.009	Mid 1 (cf)		--
Md:	28.84	lb/lb-mole	Nozzle ID:	G-1	glass	Vacuum (in Hg):	10	--	-- / --	16	Mid 2 (cf)		--
Ms:	28.73	lb/lb-mole	Nozzle Dn (in.):	0.262		Pitot Tube:	Pass	--	-- / --	Pass	Mid 3 (cf)		--
											Mid-Point Leak Check Vol (cf):		--

Sample Pt.	Sample Time (minutes) Begin	End	Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F) DGM Average Amb.	Stack Amb.	Orifice Press. ΔH (in. WC) Ideal	Actual	Pump Vac (in. Hg)	Gas Temperatures (°F) Probe Amb.	Filter Amb.	Imp Exit Amb.	Aux Amb.	% ISO	Vs (fps)
1	0.00	4.00	337.448	0.18	66	71	0.82	0.82	4	78	78	55	41	103.5	23.83
2	4.00	8.00	339.642	0.18	67	72	0.82	0.82	4	80	79	51	41	96.9	23.86
3	8.00	12.00	341.701	0.33	69	72	1.50	1.50	6	80	78	46	43	93.3	32.30
4	12.00	16.00	344.391	0.34	70	73	1.55	1.50	6	80	79	46	42	98.4	32.82
5	16.00	20.00	347.273	0.34	71	73	1.55	1.60	6	80	80	46	42	95.5	32.82
6	20.00	24.00	350.071	0.38	72	73	1.73	1.70	6	80	80	46	41	100.7	34.69
7	24.00	28.00	353.198	0.38	72	73	1.73	1.70	6	80	80	46	41	97.1	34.69
8	28.00	32.00	356.211	0.42	72	73	1.91	1.90	7	80	80	46	42	92.1	36.47
9	32.00	36.00	359.214	0.42	72	73	1.91	1.90	7	80	80	46	42	96.7	36.47
10	36.00	40.00	362.367	0.40	72	73	1.82	1.80	6	80	79	46	42	94.2	35.60
11	40.00	44.00	365.365	0.40	73	73	1.83	1.80	6	80	79	46	44	97.2	35.60
12	44.00	48.00	368.465	0.40	73	73	1.83	1.80	6	80	80	46	43	94.4	35.60
1	48.00	52.00	371.478	0.22	72	73	1.00	1.00	4	80	80	56	47	102.4	26.40
2	52.00	56.00	373.901	0.31	73	73	1.42	1.40	5	80	80	49	47	101.3	31.34
3	56.00	60.00	376.751	0.37	73	73	1.69	1.60	6	81	80	48	46	95.6	34.23
4	60.00	64.00	379.687	0.40	74	74	1.83	1.80	6	81	81	48	41	98.1	35.63
5	64.00	68.00	382.821	0.40	75	74	1.83	1.80	6	80	80	50	47	96.9	35.63
6	68.00	72.00	385.920	0.40	76	74	1.83	1.80	6	81	80	51	49	99.9	35.63
7	72.00	76.00	389.121	0.42	76	74	1.93	1.90	6	81	80	51	49	91.3	36.51
8	76.00	80.00	392.119	0.41	77	74	1.88	1.90	6	80	80	52	50	95.1	36.07
9	80.00	84.00	395.211	0.39	77	74	1.79	1.80	6	81	80	52	49	97.7	35.18
10	84.00	88.00	398.310	0.39	77	74	1.79	1.80	6	81	80	53	49	97.7	35.18
11	88.00	92.00	401.411	0.40	78	74	1.84	1.80	6	81	80	53	50	99.1	35.63
12	92.00	96.00	404.599	0.40	78	74	1.84	1.80	6	81	80	54	51	97.0	35.63
	Final DGM:		407.718												

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	70.270 ft^3	0.36 in. WC	72.8 °F	73.2 °F	7	1.635 in. WC	97.7	0.019	-2.6

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	11:42	**Source:**	PPA Carbon Bed Outlet	
Date:	5/6/21	Run 2 VALID	**End Time:**	13:32	**Project No.:**	2021-1324O	**Parameter:** HFPO-DA

STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA
Moisture:	1.0	% est.	Meter Box ID:	11		Est. Tm:	73	°F	OTM-45	Pb:	30.00	in. Hg	Vlc (ml)
Barometric:	30.04	in. Hg	Y:	0.992		Est. Ts:	73	°F		Pg:	2.20	in. WC	32.2
Static Press:	2.00	in. WC	ΔH @ (in.WC):	1.650		Est. ΔP:	0.36	in. WC		O_2:	20.9	%	K-FACTOR
Stack Press:	30.19	in. Hg	Probe ID:	P4-1		Est. Dn:	0.262	in.		CO_2:	0.1	%	4.57
CO_2:	0.0	%	Liner Material:	glass		Target Rate:	0.75	scfm					
O_2:	20.9	%	Pitot ID:	P4-1		LEAK CHECKS	Pre	Mid 1	Mid 2 / Mid 3	Post	Check Pt.	Initial	Final / Corr.
N_2/CO:	79.1	%	Pitot Cp/Type:	0.840	S-type	Leak Rate (cfm):	0.011	--	-- / --	0.005	Mid 1 (cf)		--
Md:	28.84	lb/lb-mole	Nozzle ID:	G-1	glass	Vacuum (in Hg):	12	--	-- / --	12	Mid 2 (cf)		--
Ms:	28.73	lb/lb-mole	Nozzle Dn (in.):	0.262		Pitot Tube:	Pass		-- / --	Pass	Mid 3 (cf)		--
											Mid-Point Leak Check Vol (cf):		--

Sample Pt.	Sample Time (minutes) Begin	End	Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F) DGM Average Amb. --	Stack Amb. --	Orifice Press. ΔH (in. WC) Ideal	Actual	Pump Vac (in. Hg)	Gas Temperatures (°F) Probe Amb. --	Filter Amb. --	Imp Exit Amb. --	Aux Amb. --	% ISO	Vs (fps)
1	0.00	4.00	408.525	0.26	77	75	1.19	1.20	5	82	80	62	58	99.0	28.75
2	4.00	8.00	411.089	0.28	79	76	1.29	1.30	5	84	84	54	50	98.9	29.86
3	8.00	12.00	413.754	0.43	80	76	1.98	2.00	6	82	83	52	49	100.7	37.01
4	12.00	16.00	417.121	0.43	80	76	1.98	2.00	6	82	84	51	50	98.6	37.01
5	16.00	20.00	420.416	0.42	82	76	1.94	1.90	6	80	83	51	48	97.6	36.58
6	20.00	24.00	423.652	0.46	82	76	2.13	2.10	6	81	82	50	49	97.1	38.28
7	24.00	28.00	427.021	0.48	83	77	2.21	2.20	7	81	82	51	49	97.2	39.14
8	28.00	32.00	430.466	0.46	84	77	2.13	2.10	7	81	80	51	49	97.2	38.31
9	32.00	36.00	433.845	0.48	84	77	2.22	2.20	7	80	80	51	48	98.7	39.14
10	36.00	40.00	437.349	0.44	85	77	2.04	2.00	7	81	79	50	48	95.4	37.47
11	40.00	44.00	440.600	0.44	85	77	2.04	2.00	7	81	80	51	49	101.9	37.47
12	44.00	48.00	444.073	0.40	85	77	1.86	1.80	6	81	80	53	48	94.1	35.73
1	48.00	52.00	447.134	0.21	83	77	0.97	0.97	5	84	81	60	59	97.9	25.89
2	52.00	56.00	449.438	0.32	85	77	1.48	1.50	6	84	82	52	54	100.9	31.96
3	56.00	60.00	452.372	0.36	86	77	1.67	1.70	6	84	82	52	51	98.0	33.90
4	60.00	64.00	455.401	0.38	88	77	1.77	1.80	6	85	83	48	50	99.3	34.82
5	64.00	68.00	458.566	0.42	89	77	1.96	1.90	7	86	85	48	50	102.4	36.61
6	68.00	72.00	462.001	0.44	90	77	2.06	2.10	7	86	85	48	49	93.0	37.47
7	72.00	76.00	465.199	0.46	90	77	2.15	2.20	7	86	85	47	50	96.6	38.31
8	76.00	80.00	468.594	0.46	90	77	2.15	2.20	7	86	84	47	49	98.7	38.31
9	80.00	84.00	472.062	0.45	90	77	2.11	2.10	7	86	85	48	50	95.6	37.90
10	84.00	88.00	475.389	0.44	90	78	2.06	2.10	7	86	85	48	51	96.9	37.51
11	88.00	92.00	478.718	0.42	90	78	1.96	2.00	7	87	85	49	51	97.9	36.65
12	92.00	96.00	482.005	0.42	90	78	1.96	2.00	7	84	86	50	52	98.6	36.65
	Final DGM:		485.318												

RESULTS	Run Time	Vm	ΔP	58	56	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	76.793 ft^3	0.41 in. WC	85.0 °F	76.8 °F	7	1.890 in. WC	98.7	0.020	-2.2

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	14:00	**Source:**	PPA Carbon Bed Outlet	
Date:	5/6/21	Run 3 VALID	**End Time:**	15:45	**Project No.:**	2021-1324O	**Parameter:** HFPO-DA

STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA
Moisture:	1.0	% est.	Meter Box ID:	11		Est. Tm:	85	°F	OTM-45	Pb:	30.00	in. Hg	Vlc (ml)
Barometric:	30.04	in. Hg	Y:	0.992		Est. Ts:	77	°F		Pg:	2.20	in. WC	28.6
Static Press:	2.00	in. WC	ΔH @ (in.WC):	1.650		Est. ΔP:	0.41	in. WC		O_2:	20.9	%	K-FACTOR
Stack Press:	30.19	in. Hg	Probe ID:	P4-1		Est. Dn:	0.252	in.		CO_2:	0.1	%	4.643
CO_2:	0.0	%	Liner Material:	glass		Target Rate:	0.75	scfm					
O_2:	20.9	%	Pitot ID:	P4-1		LEAK CHECKS	Pre	Mid 1	Mid 2	Mid 3	Post	Check Pt.	Initial / Final / Corr.
N_2/CO:	79.1	%	Pitot Cp/Type:	0.840	S-type	Leak Rate (cfm):	0.005	--	--	--	0.005	Mid 1 (cf)	--
Md:	28.84	lb/lb-mole	Nozzle ID:	G-1	glass	Vacuum (in Hg):	12	--	--	--	16	Mid 2 (cf)	--
Ms:	28.73	lb/lb-mole	Nozzle Dn (in.):	0.262		Pitot Tube:	Pass	--	--	--	Pass	Mid 3 (cf)	--
												Mid-Point Leak Check Vol (cf):	--

Sample Pt.	Sample Time (minutes) Begin	End	Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F) DGM Average Amb. --	Stack Amb. --	Orifice Press. ΔH (in. WC) Ideal	Actual	Pump Vac (in. Hg)	Gas Temperatures (°F) Probe Amb. --	Filter Amb. --	Imp Exit Amb. --	Aux Amb. --	% ISO	Vs (fps)
1	0.00	4.00	485.505	0.24	86	78	1.11	1.10	5	85	86	62	43	100.9	27.70
2	4.00	8.00	488.051	0.33	87	78	1.53	1.50	6	85	86	54	42	95.8	32.48
3	8.00	12.00	490.890	0.38	88	78	1.77	1.80	6	86	84	53	42	98.4	34.86
4	12.00	16.00	494.025	0.41	89	79	1.91	1.90	6	85	85	50	44	96.9	36.24
5	16.00	20.00	497.230	0.42	89	79	1.95	2.00	7	86	86	48	44	96.5	36.68
6	20.00	24.00	500.460	0.45	90	79	2.10	2.10	7	86	85	47	42	96.8	37.97
7	24.00	28.00	503.820	0.46	90	79	2.14	2.10	7	85	85	46	44	96.6	38.39
8	28.00	32.00	507.210	0.45	90	79	2.10	2.10	7	85	84	46	46	98.8	37.97
9	32.00	36.00	510.640	0.45	91	79	2.10	2.10	7	85	84	46	46	95.8	37.97
10	36.00	40.00	513.970	0.44	91	79	2.05	2.10	7	85	84	47	42	101.3	37.54
11	40.00	44.00	517.450	0.42	91	79	1.96	2.00	7	85	83	47	42	98.6	36.68
12	44.00	48.00	520.762	0.42	91	79	1.96	2.00	7	85	86	47	42	95.4	36.68
1	48.00	52.00	523.969	0.24	88	79	1.12	1.10	5	85	87	56	46	101.5	27.73
2	52.00	56.00	526.540	0.41	89	79	1.91	1.90	7	81	90	46	43	93.3	36.24
3	56.00	60.00	529.630	0.42	89	79	1.95	2.00	7	81	91	46	45	98.9	36.68
4	60.00	64.00	532.940	0.43	90	79	2.01	2.00	7	82	91	47	45	99.3	37.11
5	64.00	68.00	536.312	0.44	90	79	2.05	2.10	7	82	90	46	44	100.0	37.54
6	68.00	72.00	539.745	0.44	90	79	2.05	2.10	7	83	89	46	44	97.3	37.54
7	72.00	76.00	543.087	0.45	91	79	2.10	2.10	8	82	88	46	44	93.2	37.97
8	76.00	80.00	546.329	0.45	92	79	2.10	2.10	8	83	89	46	46	100.5	37.97
9	80.00	84.00	549.828	0.44	92	79	2.06	2.10	8	82	90	47	45	95.2	37.54
10	84.00	88.00	553.110	0.44	92	79	2.06	2.10	8	82	89	47	46	99.8	37.54
11	88.00	92.00	556.550	0.42	92	79	1.97	2.00	8	82	90	48	45	101.9	36.68
12	92.00	96.00	559.982	0.40	92	79	1.87	1.90	8	81	89	48	45	94.4	35.80
	Final DGM:		563.084												

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	77.579 ft^3	0.41 in. WC	89.8 °F	78.9 °F	8	1.929 in. WC	98.3	0.018	-2.8

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Inlet
Project No. 2021-1324O
Parameter HFPO-DA

Run Number		Run 1	Run 2	Run 3	Average
Date		5/6/21	5/6/21	5/6/21	--
Start Time		9:13	11:42	14:00	--
Stop Time		11:06	13:32	15:45	--
Run Time, min	(θ)	96.0	96.0	96.0	96.0
INPUT DATA					
Barometric Pressure, in. Hg	(Pb)	30.04	30.04	30.04	30.04
Meter Correction Factor	(Y)	0.994	0.994	0.994	0.994
Orifice Calibration Value	(ΔH @)	1.800	1.800	1.800	1.800
Meter Volume, ft^3	(Vm)	55.579	56.205	53.847	55.210
Meter Temperature, °F	(Tm)	58.0	65.4	68.2	63.9
Meter Temperature, °R	(Tm)	517.7	525.0	527.9	523.5
Meter Orifice Pressure, in. WC	(ΔH)	1.102	1.121	1.018	1.080
Volume H_2O Collected, mL	(Vlc)	26.5	32.4	30.2	29.7
Nozzle Diameter, in	(Dn)	0.258	0.258	0.258	0.258
Area of Nozzle, ft^2	(An)	0.0004	0.0004	0.0004	0.0004
FH HFPO-DA Mass, ng	$M_{(HFPODA)}$	223,000.0	270,000.0	248,000.0	247,000.0
BH HFPO-DA Mass, ng	$M_{(HFPODA)}$	127,000.0	130,000.0	66,000.0	107,666.7
Imp HFPO-DA Mass, ng	$M_{(HFPODA)}$	33.7	3.9	24.5	20.7
Breakthrough HFPO-DA Mass, ng	$M_{(HFPODA)}$	3.6	4.1	4.1	3.9
Total HFPO-DA Mass, ng	$M_{(HFPODA)}$	350,037.3	400,008.0	314,028.6	354,691.3
ISOKINETIC DATA					
Standard Meter Volume, ft^3	(Vmstd)	56.691	56.529	53.851	55.690
Standard Water Volume, ft^3	(Vwstd)	1.250	1.528	1.424	1.401
Moisture Fraction Measured	(BWSmsd)	0.022	0.026	0.026	0.025
Moisture Fraction @ Saturation	(BWSsat)	0.019	0.021	0.022	0.021
Moisture Fraction	(BWS)	0.019	0.021	0.022	0.021
Meter Pressure, in Hg	(Pm)	30.12	30.12	30.11	30.12
Volume at Nozzle, ft^3	(Vn)	57.395	57.832	55.252	56.83
Isokinetic Sampling Rate, (%)	(I)	100.9	100.9	101.5	101.1
DGM Calibration Check Value, (+/- 5%)	(Y_{qa})	-0.2	-0.1	0.2	-0.1
EMISSION CALCULATIONS					
HFPO-DA Concentration, ng/dscm	$C_{(HFPODA)}$	2.18E+05	2.50E+05	2.06E+05	2.25E+05
HFPO-DA Emission Rate, lb/hr	$ER_{(HFPODA)}$	8.30E-03	9.49E-03	7.40E-03	8.40E-03

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Inlet
Project No. 2021-1324O
Parameter HFPO-DA

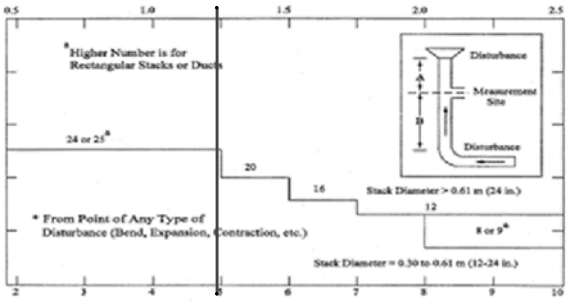
Run Number		Run 1	Run 2	Run 3	Average
Date		5/6/21	5/6/21	5/6/21	--
Start Time		9:13	11:42	14:00	--
Stop Time		11:06	13:32	15:45	--
Run Time, min		96.0	96.0	96.0	96.0
VELOCITY HEAD, in. WC					
Point 1		0.29	0.42	0.30	0.34
Point 2		0.27	0.41	0.30	0.33
Point 3		0.25	0.36	0.25	0.29
Point 4		0.24	0.26	0.23	0.24
Point 5		0.25	0.21	0.25	0.24
Point 6		0.23	0.18	0.26	0.22
Point 7		0.24	0.17	0.23	0.21
Point 8		0.26	0.17	0.17	0.20
Point 9		0.24	0.16	0.18	0.19
Point 10		0.23	0.16	0.24	0.21
Point 11		0.24	0.16	0.22	0.21
Point 12		0.24	0.16	0.24	0.21
Point 13		0.37	0.31	0.37	0.35
Point 14		0.34	0.27	0.34	0.32
Point 15		0.32	0.23	0.25	0.27
Point 16		0.28	0.25	0.24	0.26
Point 17		0.24	0.27	0.23	0.25
Point 18		0.18	0.24	0.14	0.19
Point 19		0.17	0.11	0.12	0.13
Point 20		0.17	0.27	0.12	0.19
Point 21		0.17	0.26	0.12	0.18
Point 22		0.16	0.24	0.14	0.18
Point 23		0.16	0.27	0.15	0.19
Point 24		0.16	0.24	0.13	0.18
CALCULATED DATA					
Square Root of ΔP, $(\text{in. WC})^{1/2}$	(ΔP)	0.484	0.485	0.460	0.476
Pitot Tube Coefficient	(Cp)	0.840	0.840	0.840	0.840
Barometric Pressure, in. Hg	(Pb)	30.04	30.04	30.04	30.04
Static Pressure, in. WC	(Pg)	-1.80	-2.00	-1.90	-1.90
Stack Pressure, in. Hg	(Ps)	29.91	29.89	29.90	29.90
Stack Cross-sectional Area, ft^2	(As)	6.31	6.31	6.31	6.31
Temperature, °F	(Ts)	62.8	65.5	67.5	65.3
Temperature, °R	(Ts)	522.5	525.2	527.1	524.934
Moisture Fraction Measured	(BWSmsd)	0.022	0.026	0.026	0.025
Moisture Fraction @ Saturation	(BWSsat)	0.019	0.021	0.022	0.021
Moisture Fraction	(BWS)	0.019	0.021	0.022	0.021
O_2 Concentration, %	(O_2)	20.9	20.9	20.9	20.9
CO_2 Concentration, %	(CO_2)	0.1	0.1	0.1	0.1
Molecular Weight, lb/lb-mole (dry)	(Md)	28.85	28.85	28.85	28.85
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.65	28.63	28.61	28.63
Velocity, ft/sec	(Vs)	27.1	27.3	25.9	26.8
VOLUMETRIC FLOW RATE					
At Stack Conditions, acfm	(Qa)	10,266	10,314	9,815	10,132
At Standard Conditions, dscfm	(Qs)	10,167	10,138	9,599	9,968

Method 1 Data

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Inlet
Project No. 2021-1324O
Date: 05/05/21

Stack Parameters

Duct Orientation:	Horizontal	
Duct Design:	Circular	
Distance from Far Wall to Outside of Port:	47.50	in
Nipple Length:	13.50	in
Depth of Duct:	34.00	in
Cross Sectional Area of Duct:	6.31	ft^2
No. of Test Ports:	2	
Distance A:	3.5	ft
Distance A Duct Diameters:	1.2	**(must be > 0.5)**
Distance B:	5.0	ft
Distance B Duct Diameters:	1.8	**(must be > 2)**
Minimum Number of Traverse Points:	24	
Actual Number of Traverse Points:	24	
Number of Readings per Point:	1	



CIRCULAR DUCT

LOCATION OF TRAVERSE POINTS

Number of traverse points on a diameter

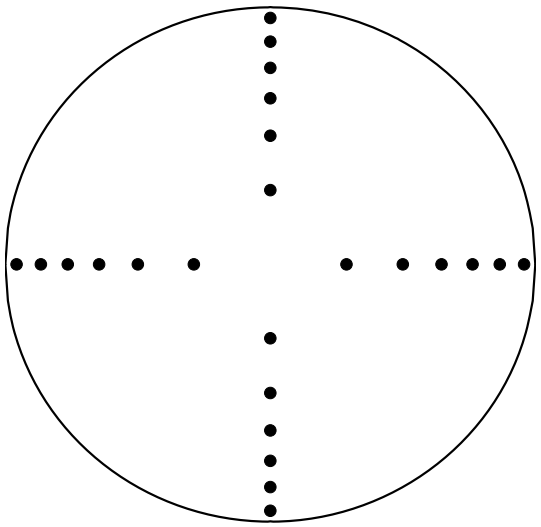
	2	3	4	5	6	7	8	9	10	11	12
1	14.6	--	6.7	--	4.4	--	3.2	--	2.6	--	2.1
2	85.4	--	25.0	--	14.6	--	10.5	--	8.2	--	6.7
3	--	--	75.0	--	29.6	--	19.4	--	14.6	--	11.8
4	--	--	93.3	--	70.4	--	32.3	--	22.6	--	17.7
5	--	--	--	--	85.4	--	67.7	--	34.2	--	25.0
6	--	--	--	--	95.6	--	80.6	--	65.8	--	35.6
7	--	--	--	--	--	--	89.5	--	77.4	--	64.4
8	--	--	--	--	--	--	96.8	--	85.4	--	75.0
9	--	--	--	--	--	--	--	--	91.8	--	82.3
10	--	--	--	--	--	--	--	--	97.4	--	88.2
11	--	--	--	--	--	--	--	--	--	--	93.3
12	--	--	--	--	--	--	--	--	--	--	97.9

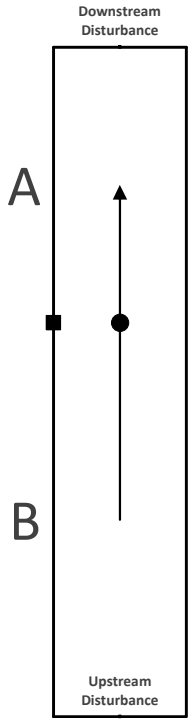
**Percent of stack diameter from inside wall to traverse point.*

Traverse Point	% of Diameter	Distance from inside wall	Distance from outside of port
1	2.1	1.00	14.50
2	6.7	2.28	15.78
3	11.8	4.01	17.51
4	17.7	6.02	19.52
5	25.0	8.50	22.00
6	35.6	12.10	25.60
7	64.4	21.90	35.40
8	75.0	25.50	39.00
9	82.3	27.98	41.48
10	88.2	29.99	43.49
11	93.3	31.72	45.22
12	97.9	33.00	46.50

Stack Diagram
A = 3.5 ft.
B = 5 ft.
Depth of Duct = 34 in.

Cross Sectional Area





Cyclonic Flow Check

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Inlet
Project No. 2021-1324O
Date 05/06/21

Sample Point	Angle (ΔP=0)
1	10
2	10
3	12
4	12
5	14
6	10
7	8
8	8
9	8
10	12
11	12
12	10
13	12
14	12
15	12
16	10
17	10
18	8
19	12
20	10
21	12
22	12
23	14
24	10
Average	11

Method 4 Data

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Inlet
Project No. 2021-1324O
Parameter HFPO-DA
Analysis Gravimetric

Run 1	Date:	5/6/21							
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	Empty	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	0.0	843.7	1143.7
Final Mass, g	0.0	2.0	102.0	102.0	100.0	2.0	0.0	862.2	1170.2
Gain	0.0	2.0	2.0	2.0	0.0	2.0	0.0	18.5	26.5
Run 2	**Date:**	5/6/21							
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	Empty	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	0.0	896.2	1196.2
Final Mass, g	0.0	4.0	100.0	100.0	102.0	4.0	0.0	918.6	1228.6
Gain	0.0	4.0	0.0	0.0	2.0	4.0	0.0	22.4	32.4
Run 3	**Date:**	5/6/21							
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	Empty	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	0.0	875.4	1175.4
Final Mass, g	0.0	4.0	102.0	102.0	102.0	2.0	0.0	893.6	1205.6
Gain	0.0	4.0	2.0	2.0	2.0	2.0	0.0	18.2	30.2

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	9:13	**Source:**	PPA Carbon Bed Inlet	
Date:	5/6/21	Run 1 VALID	**End Time:**	11:06	**Project No.:**	2021-1324O	**Parameter:** HFPO-DA

STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA
Moisture:	1.0	% est.	Meter Box ID:	7		Est. Tm:	88	°F	OTM-45	Pb:	30.04	in. Hg	Vlc (ml)
Barometric:	30.04	in. Hg	Y:	0.994		Est. Ts:	72	°F		Pg:	-1.80	in. WC	26.5
Static Press:	-1.50	in. WC	ΔH @ (in.WC):	1.800		Est. ΔP:	0.42	in. WC		O_2:	20.9	%	K-FACTOR
Stack Press:	29.93	in. Hg	Probe ID:	P4-3		Est. Dn:	0.213	in.		CO_2:	0.1	%	4.790
CO_2:	0.0	%	Liner Material:	glass		Target Rate:	0.55	scfm					
O_2:	20.9	%	Pitot ID:	P4-3		LEAK CHECK	Pre	Mid 1	Mid 2	Mid 3	Post	Check Pt.	Initial / Final / Corr.
N_2/CO:	79.1	%	Pitot Cp/Type:	0.840	S-type	Leak Rate (cfm):	0.003	--	--	--	0.003	Mid 1 (cf)	--
Md:	28.84	lb/lb-mole	Nozzle ID:	G-2	glass	Vacuum (in Hg):	10	--	--	--	5	Mid 2 (cf)	--
Ms:	28.73	lb/lb-mole	Nozzle Dn (in.):	0.258		Pitot Tube:	Pass		--	--	Pass	Mid 3 (cf)	--
												Mid-Point Leak Check Vol (cf):	--

Sample Pt.	Sample Time (minutes) Begin	End	Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F) DGM Average Amb.	Stack Amb.	Orifice Press. ΔH (in. WC) Ideal	Actual	Pump Vac (in. Hg)	Gas Temperatures (°F) Probe Amb.	Filter Amb.	Imp Exit Amb.	Aux Amb.	% ISO	Vs (fps)
1	0.00	4.00	434.105	0.29	54	62	1.33	1.30	4	73	73	52	32	97.0	30.12
2	4.00	8.00	436.585	0.27	54	62	1.24	1.20	3	73	74	45	32	98.8	29.07
3	8.00	12.00	439.022	0.25	55	63	1.15	1.20	3	73	72	43	30	99.8	27.99
4	12.00	16.00	441.391	0.24	55	63	1.10	1.10	2	73	74	42	31	101.5	27.43
5	16.00	20.00	443.754	0.25	56	63	1.15	1.20	3	73	73	41	31	97.9	27.99
6	20.00	24.00	446.082	0.23	56	62	1.06	1.10	2	73	73	40	30	101.5	26.83
7	24.00	28.00	448.403	0.24	56	62	1.11	1.10	2	73	73	39	30	103.5	27.40
8	28.00	32.00	450.820	0.26	56	63	1.19	1.20	3	73	73	39	30	96.1	28.55
9	32.00	36.00	453.152	0.24	57	62	1.11	1.10	3	73	73	38	31	100.5	27.40
10	36.00	40.00	455.502	0.23	57	61	1.06	1.10	3	72	73	39	30	101.8	26.80
11	40.00	44.00	457.833	0.24	57	63	1.10	1.10	3	73	74	40	32	100.3	27.43
12	44.00	48.00	460.176	0.24	58	63	1.11	1.10	3	73	73	40	32	100.8	27.43
1	48.00	52.00	462.535	0.37	57	63	1.70	1.70	5	73	73	49	36	101.0	34.06
2	52.00	56.00	465.461	0.34	59	63	1.57	1.60	4	73	74	45	37	100.4	32.65
3	56.00	60.00	468.263	0.32	59	63	1.48	1.50	4	73	73	42	37	98.2	31.67
4	60.00	64.00	470.921	0.28	60	63	1.29	1.30	3	73	74	42	34	99.7	29.63
5	64.00	68.00	473.450	0.24	61	63	1.11	1.10	3	73	73	42	35	99.2	27.43
6	68.00	72.00	475.785	0.18	61	63	0.84	0.84	1	73	73	42	33	94.8	23.75
7	72.00	76.00	477.720	0.17	61	64	0.79	0.79	1	74	74	42	34	109.5	23.11
8	76.00	80.00	479.891	0.17	61	63	0.79	0.79	1	73	73	41	35	109.3	23.09
9	80.00	84.00	482.060	0.17	61	64	0.79	0.79	1	74	73	41	35	91.0	23.11
10	84.00	88.00	483.863	0.16	61	63	0.74	0.74	1	73	74	41	34	99.4	22.40
11	88.00	92.00	485.776	0.16	62	64	0.74	0.74	1	74	74	41	34	103.1	22.42
12	92.00	96.00	487.761	0.16	63	63	0.75	0.75	1	73	74	42	37	99.6	22.40
	Final DGM:		489.684												

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	55.579 ft^3	0.24 in. WC	58.0 °F	62.8 °F	5	1.102 in. WC	100.9	0.019	-0.2

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC			**Start Time:**	11:42	**Source:**	PPA Carbon Bed Inlet
Date:	5/6/21	**Run 2**	VALID	**End Time:**	13:32	**Project No.:**	2021-1324O

Parameter: HFPO-DA

STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)		MOIST. DATA
Moisture:	1.0	% est.	Meter Box ID:	7		Est. Tm:	58	°F	OTM-45	Pb:	30.04 in. Hg	Vlc (ml)
Barometric:	30.04	in. Hg	Y:	0.994		Est. Ts:	63	°F		Pg:	-2.00 in. WC	32.4
Static Press:	-1.50	in. WC	ΔH @ (in.WC):	1.800		Est. ΔP:	0.24	in. WC		O_2:	20.9 %	K-FACTOR
Stack Press:	29.93	in. Hg	Probe ID:	P4-3		Est. Dn:	0.252	in.		CO_2:	0.1 %	4.61
CO_2:	0.0	%	Liner Material:	glass		Target Rate:	0.55	scfm				
O_2:	20.9	%	Pitot ID:	P4-3		LEAK CHECK	Pre	Mid 1	Mid 2	Mid 3	Post	Check Pt. Initial Final Corr.
N_2/CO:	79.1	%	Pitot Cp/Type:	0.840	S-type	Leak Rate (cfm):	0.005	--	--	--	0.002	Mid 1 (cf) --
Md:	28.84	lb/lb-mole	Nozzle ID:	G-2	glass	Vacuum (in Hg):	10	--	--	--	5	Mid 2 (cf) --
Ms:	28.73	lb/lb-mole	Nozzle Dn (in.):	0.258		Pitot Tube:	Pass	--	--	--	Pass	Mid 3 (cf) --
												Mid-Point Leak Check Vol (cf): --

Sample Pt.	Sample Time (minutes) Begin	End	Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F) DGM Average Amb.	Stack Amb.	Orifice Press. ΔH (in. WC) Ideal	Actual	Pump Vac (in. Hg)	Gas Temperatures (°F) Probe Amb.	Filter Amb.	Imp Exit Amb.	Aux Amb.	% ISO	Vs (fps)
1	0.00	4.00	489.911	0.42	61	64	1.94	1.90	4	75	76	58	54	98.3	36.32
2	4.00	8.00	492.965	0.41	63	65	1.90	1.90	4	75	75	57	42	99.5	35.92
3	8.00	12.00	496.027	0.36	63	65	1.67	1.70	4	75	76	55	41	99.6	33.66
4	12.00	16.00	498.901	0.26	64	65	1.21	1.20	2	76	78	52	43	99.0	28.60
5	16.00	20.00	501.335	0.21	64	65	0.98	0.98	1	76	76	49	43	100.5	25.71
6	20.00	24.00	503.558	0.18	64	65	0.84	0.84	1	75	76	47	46	100.8	23.80
7	24.00	28.00	505.623	0.17	65	65	0.79	0.79	1	76	76	46	40	100.4	23.13
8	28.00	32.00	507.627	0.17	65	65	0.79	0.79	1	78	76	45	40	106.5	23.13
9	32.00	36.00	509.750	0.16	65	65	0.75	0.75	1	77	78	44	42	97.2	22.44
10	36.00	40.00	511.632	0.16	66	65	0.75	0.75	1	76	77	44	45	100.2	22.44
11	40.00	44.00	513.573	0.16	64	65	0.74	0.74	1	76	76	43	37	101.4	22.44
12	44.00	48.00	515.532	0.16	64	65	0.74	0.74	1	77	76	43	36	101.1	22.44
1	48.00	52.00	517.485	0.31	64	66	1.44	1.40	3	77	77	49	43	95.7	31.26
2	52.00	56.00	520.053	0.27	65	66	1.25	1.30	2	78	76	43	44	99.8	29.18
3	56.00	60.00	522.558	0.23	66	66	1.07	1.10	2	78	77	44	41	101.5	26.93
4	60.00	64.00	524.912	0.25	66	66	1.16	1.20	2	79	77	46	43	100.5	28.08
5	64.00	68.00	527.343	0.27	67	66	1.26	1.30	2	79	77	47	41	107.3	29.18
6	68.00	72.00	530.045	0.24	68	66	1.12	1.10	2	79	77	46	45	96.6	27.51
7	72.00	76.00	532.343	0.11	68	64	0.52	0.52	1	77	77	47	44	98.8	18.59
8	76.00	80.00	533.940	0.27	68	66	1.26	1.30	3	77	77	49	45	102.4	29.18
9	80.00	84.00	536.525	0.26	68	66	1.22	1.20	2	78	77	48	44	97.4	28.63
10	84.00	88.00	538.937	0.24	68	67	1.12	1.10	2	77	78	49	45	100.5	27.53
11	88.00	92.00	541.328	0.27	68	67	1.26	1.20	2	79	78	49	45	97.9	29.20
12	92.00	96.00	543.795	0.24	68	67	1.12	1.10	2	78	78	50	46	97.6	27.53
	Final DGM:		546.116												

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	56.205 ft^3	0.24 in. WC	65.4 °F	65.5 °F	4	1.121 in. WC	100.9	0.021	-0.1

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	14:00	**Source:**	PPA Carbon Bed Inlet	
Date:	5/6/21	Run 3 VALID	**End Time:**	15:45	**Project No.:**	2021-1324O	**Parameter:** HFPO-DA

STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA
Moisture:	1.0	% est.	Meter Box ID:	7		Est. Tm:	65	°F	OTM-45	Pb:	30.04	in. Hg	Vlc (ml)
Barometric:	30.04	in. Hg	Y:	0.994		Est. Ts:	66	°F		Pg:	-1.90	in. WC	30.2
Static Press:	-1.50	in. WC	ΔH @ (in.WC):	1.800		Est. ΔP:	0.24	in. WC		O_2:	20.9	%	K-FACTOR
Stack Press:	29.93	in. Hg	Probe ID:	P4-3		Est. Dn:	0.250	in.		CO_2:	0.1	%	4.649
CO_2:	0.0	%	Liner Material:	glass		Target Rate:	0.55	scfm					
O_2:	20.9	%	Pitot ID:	P4-3		LEAK CHECKS	Pre	Mid 1	Mid 2	Mid 3	Post	Check Pt.	Initial / Final / Corr.
N_2/CO:	79.1	%	Pitot Cp/Type:	0.840	S-type	Leak Rate (cfm):	0.001	--	--	--	0.002	Mid 1 (cf)	--
Md:	28.84	lb/lb-mole	Nozzle ID:	G-2	glass	Vacuum (in Hg):	10	--	--	--	5	Mid 2 (cf)	--
Ms:	28.73	lb/lb-mole	Nozzle Dn (in.):	0.258		Pitot Tube:	Pass	--	--	--	Pass	Mid 3 (cf)	--
												Mid-Point Leak Check Vol (cf):	--

Sample Pt.	Sample Time (minutes) Begin	End	Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F) DGM Average Amb.	Stack Amb.	Orifice Press. ΔH (in. WC) Ideal	Actual	Pump Vac (in. Hg)	Gas Temperatures (°F) Probe Amb.	Filter Amb.	Imp Exit Amb.	Aux Amb.	% ISO	Vs (fps)
1	0.00	4.00	546.287	0.30	66	68	1.39	1.40	3	77	81	58	42	99.3	30.81
2	4.00	8.00	548.912	0.30	67	68	1.39	1.40	3	78	79	55	36	99.8	30.81
3	8.00	12.00	551.555	0.25	67	68	1.16	1.20	3	79	79	51	35	102.4	28.13
4	12.00	16.00	554.033	0.23	67	68	1.07	1.10	2	78	79	48	34	101.2	26.98
5	16.00	20.00	556.382	0.25	67	67	1.16	1.20	3	77	79	46	35	98.8	28.10
6	20.00	24.00	558.774	0.26	67	67	1.21	1.20	3	77	79	44	34	102.3	28.66
7	24.00	28.00	561.300	0.23	68	67	1.07	1.10	2	77	79	43	33	100.6	26.95
8	28.00	32.00	563.640	0.17	68	65	0.80	0.80	1	78	77	43	34	98.8	23.13
9	32.00	36.00	565.622	0.18	68	67	0.84	0.84	1	77	77	43	33	106.8	23.85
10	36.00	40.00	567.823	0.24	69	67	1.12	1.10	2	77	77	43	35	93.3	27.53
11	40.00	44.00	570.045	0.22	69	67	1.03	1.00	2	77	77	42	33	101.1	26.36
12	44.00	48.00	572.350	0.24	69	68	1.12	1.10	2	78	78	43	35	97.4	27.56
1	48.00	52.00	574.668	0.37	68	68	1.72	1.70	4	78	78	48	33	97.2	34.22
2	52.00	56.00	577.532	0.34	69	68	1.58	1.60	4	79	79	41	33	98.0	32.80
3	56.00	60.00	580.306	0.25	69	68	1.17	1.20	3	79	80	40	32	98.7	28.13
4	60.00	64.00	582.703	0.24	70	68	1.12	1.10	2	80	79	41	34	99.1	27.56
5	64.00	68.00	585.065	0.23	70	68	1.07	1.10	2	79	81	42	34	105.7	26.98
6	68.00	72.00	587.530	0.14	70	68	0.65	0.65	1	79	80	42	34	96.3	21.05
7	72.00	76.00	589.285	0.12	69	68	0.56	0.56	1	80	81	43	34	102.8	19.49
8	76.00	80.00	591.018	0.12	69	66	0.56	0.56	1	79	80	42	34	99.6	19.45
9	80.00	84.00	592.700	0.12	69	66	0.56	0.56	1	79	80	43	35	104.5	19.45
10	84.00	88.00	594.465	0.14	69	68	0.65	0.66	1	79	80	43	35	100.8	21.05
11	88.00	92.00	596.300	0.15	68	68	0.70	0.70	1	79	80	43	35	106.4	21.79
12	92.00	96.00	598.300	0.13	68	68	0.61	0.61	1	80	80	44	36	104.7	20.28

Final DGM: 600.134

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	53.847 ft^3	0.22 in. WC	68.2 °F	67.5 °F	4	1.018 in. WC	101.5	0.022	0.2

Appendix C

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-23013-1
Client Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

For:
The Chemours Company FC, LLC
c/o AECOM
Sabre Building, Suite 300
4051 Ogletown Road
Newark, Delaware 19713

Attn: Michael Aucoin

Authorized for release by:
5/19/2021 4:07:30 PM

Courtney Adkins, Project Manager II
(865)291-3019
courtney.adkins@eurofinset.com

Table of Contents

Definitions/Glossary

Client: The Chemours Company FC, LLC
Job ID: 140-23013-1
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

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

Job ID: 140-23013-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-23013-1

Sample Receipt

The samples were received on 5/8/2021 11:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.5º C.

LCMS

LC/MS/MS Sampling Train Preparation and Analysis: The sampling train components are extracted and analyzed for Per- and Polyfluorinated Alkyl Substances (PFAS) using Eurofins TestAmerica Knoxville standard operating procedures KNOX-OP-0026 and KNOX-LC-0007.

The sampling trains are prepared as four analytical fractions: The particulate filter and front half of the filter holder, nozzle and probe solvent rinses are combined for one analytical fraction. The XAD-2 resin trap and back half of the filter holder, coil condenser and connecting glassware solvent rinses are also combined as a separate analytical fraction. The condensate, impinger contents and their related glassware DI water rinses make up the third analytical fraction. The breakthrough XAD module makes up the fourth analytical fraction.

The filters and XAD components are spiked with isotope dilution internal standards and the components are extracted with methanol/ammonium hydroxide by shaking for at least 18 hours. The extracts are concentrated to 10 mL and analyzed by HPLC/MS/MS. The condensates are spiked with the isotope dilution internal standards and extracted using either Solid-Phase Extraction (SPE) or diluting the water sample for analysis. Each extract at its final volume is 80:20 methanol:water

Sample results were calculated using the following equation:

Result, ηg/sample = (on-column concentration, ηg/mL) × (nominal final volume of extract (10 mL) / 1 sample) × DF × SF

Where:
DF = Instrument dilution factor
SF = Extraction Split Factor = (final volume of extract in the initial extraction batch / initial volume of extract in the “Split” batch)
For condensate, if less than the entire sample is extracted, the fraction of sample used replaces “1 sample”

Method 537 (modified): Results for samples M-1476,1477 PPA CB OUTLET R1 OTM-45 FH (140-23013-1), M-1483,1484 PPA CB OUTLET R2 OTM-45 FH (140-23013-5) and M-1490,1491 PPA CB OUTLET R3 OTM-45 FH (140-23013-9) 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

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: M-1476,1477 PPA CB OUTLET R1 OTM-45 FH (140-23013-1), M-1483,1484 PPA CB OUTLET R2 OTM-45 FH (140-23013-5) and M-1490,1491 PPA CB OUTLET R3 OTM-45 FH (140-23013-9). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: M-1478,1479,1481 PPA CB OUTLET R1 OTM-45 BH (140-23013-2) and M-1492,1493,1495 PPA CB OUTLET R3 OTM-45 BH (140-23013-10). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples M-1478,1479,1481 PPA CB OUTLET R1 OTM-45 BH (140-23013-2) and M-1492,1493,1495 PPA CB OUTLET R3 OTM-45 BH (140-23013-10) 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

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

Organic Prep

Job ID: 140-23013-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

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

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

Client Sample ID: M-1476,1477 PPA CB OUTLET R1 OTM-45 FH — Lab Sample ID: 140-23013-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.842		0.0100	0.00580	ug/Sample	10		537 (modified)	Total/NA

Client Sample ID: M-1478,1479,1481 PPA CB OUTLET R1 OTM-45 BH — Lab Sample ID: 140-23013-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.28		0.0320	0.0280	ug/Sample	20		537 (modified)	Total/NA

Client Sample ID: M-1480 PPA CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-23013-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0899		0.0750	0.0124	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: M-1482 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-23013-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00659		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: M-1483,1484 PPA CB OUTLET R2 OTM-45 FH — Lab Sample ID: 140-23013-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.580		0.00989	0.00574	ug/Sample	10		537 (modified)	Total/NA

Client Sample ID: M-1485,1486,1488 PPA CB OUTLET R2 OTM-45 BH — Lab Sample ID: 140-23013-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.117		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: M-1487 PPA CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-23013-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.106		0.0775	0.0128	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: M-1489 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-23013-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00357		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: M-1490,1491 PPA CB OUTLET R3 OTM-45 FH — Lab Sample ID: 140-23013-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.435		0.00496	0.00288	ug/Sample	5		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

Detection Summary

Client: The Chemours Company FC, LLC
Job ID: 140-23013-1
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Client Sample ID: M-1492,1493,1495 PPA CB OUTLET R3 OTM-45 BH
Lab Sample ID: 140-23013-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.16		0.0160	0.0140	ug/Sample	10		537 (modified)	Total/NA

Client Sample ID: M-1494 PPA CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-23013-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.106		0.0737	0.0122	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: M-1496 PPA CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-23013-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00717		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

Client Sample ID: M-1476,1477 PPA CB OUTLET R1 OTM-45 FH

Lab Sample ID: 140-23013-1

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.842		0.0100	0.00580	ug/Sample		05/10/21 13:24	05/15/21 22:48	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*110*		*25 - 150*	*05/10/21 13:24*	*05/15/21 22:48*	*10*

Client Sample ID: M-1478,1479,1481 PPA CB OUTLET R1 OTM-45 BH

Lab Sample ID: 140-23013-2

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.28		0.0320	0.0280	ug/Sample		05/11/21 09:02	05/17/21 16:35	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*124*		*25 - 150*	*05/11/21 09:02*	*05/17/21 16:35*	*20*

Client Sample ID: M-1480 PPA CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23013-3

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0899		0.0750	0.0124	ug/Sample		05/10/21 14:43	05/13/21 15:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*107*		*25 - 150*	*05/10/21 14:43*	*05/13/21 15:34*	*1*

Client Sample ID: M-1482 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23013-4

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00659		0.00160	0.00140	ug/Sample		05/11/21 09:02	05/17/21 16:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*25 - 150*	*05/11/21 09:02*	*05/17/21 16:44*	*1*

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

Client Sample ID: M-1483,1484 PPA CB OUTLET R2 OTM-45 FH

Lab Sample ID: 140-23013-5

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.580		0.00989	0.00574	ug/Sample		05/10/21 13:24	05/15/21 22:57	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	101		25 - 150	05/10/21 13:24	05/15/21 22:57	10

Client Sample ID: M-1485,1486,1488 PPA CB OUTLET R2 OTM-45 BH

Lab Sample ID: 140-23013-6

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.117		0.00160	0.00140	ug/Sample		05/11/21 09:02	05/17/21 16:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	100		25 - 150	05/11/21 09:02	05/17/21 16:53	1

Client Sample ID: M-1487 PPA CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23013-7

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.106		0.0775	0.0128	ug/Sample		05/10/21 14:43	05/13/21 15:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	112		25 - 150	05/10/21 14:43	05/13/21 15:43	1

Client Sample ID: M-1489 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23013-8

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00357		0.00160	0.00140	ug/Sample		05/11/21 09:02	05/17/21 17:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	95		25 - 150	05/11/21 09:02	05/17/21 17:01	1

Client Sample ID: M-1490,1491 PPA CB OUTLET R3 OTM-45 FH
Lab Sample ID: 140-23013-9

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.435		0.00496	0.00288	ug/Sample		05/10/21 13:24	05/15/21 23:06	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*94*		*25 - 150*	*05/10/21 13:24*	*05/15/21 23:06*	*5*

Client Sample ID: M-1492,1493,1495 PPA CB OUTLET R3 OTM-45 BH
Lab Sample ID: 140-23013-10

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.16		0.0160	0.0140	ug/Sample		05/11/21 09:02	05/17/21 17:28	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*127*		*25 - 150*	*05/11/21 09:02*	*05/17/21 17:28*	*10*

Client Sample ID: M-1494 PPA CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-23013-11

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.106		0.0737	0.0122	ug/Sample		05/10/21 14:43	05/13/21 15:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*110*		*25 - 150*	*05/10/21 14:43*	*05/13/21 15:52*	*1*

Client Sample ID: M-1496 PPA CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-23013-12

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00717		0.00160	0.00140	ug/Sample		05/11/21 09:02	05/17/21 17:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*89*		*25 - 150*	*05/11/21 09:02*	*05/17/21 17:37*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Job ID: 140-23013-1
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00100	0.000580	ug/Sample
HFPO-DA	0.00160	0.00140	ug/Sample
HFPO-DA	0.00200	0.000330	ug/Sample

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
Job ID: 140-23013-1
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	HFPODA (25-150)
140-23013-1	M-1476,1477 PPA CB OUTLET	110
140-23013-2	M-1478,1479,1481 PPA CB OUTLET R1 OTM-45 BH	124
140-23013-3	M-1480 PPA CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND	107
140-23013-4	M-1482 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	100
140-23013-5	M-1483,1484 PPA CB OUTLET R2 OTM-45 FH	101
140-23013-6	M-1485,1486,1488 PPA CB OUTLET R2 OTM-45 BH	100
140-23013-7	M-1487 PPA CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND	112
140-23013-8	M-1489 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	95
140-23013-9	M-1490,1491 PPA CB OUTLET R3 OTM-45 FH	94
140-23013-10	M-1492,1493,1495 PPA CB OUTLET R3 OTM-45 BH	127
140-23013-11	M-1494 PPA CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND	110
140-23013-12	M-1496 PPA CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	89
LCS 140-49653/2-B	Lab Control Sample	91
LCS 140-49661/2-B	Lab Control Sample	102
LCS 140-49702/2-B	Lab Control Sample	87
LCSD 140-49653/3-B	Lab Control Sample Dup	95
LCSD 140-49661/3-B	Lab Control Sample Dup	105
LCSD 140-49702/3-B	Lab Control Sample Dup	95
MB 140-49653/14-B	Method Blank	98
MB 140-49653/1-B	Method Blank	92
MB 140-49661/14-B	Method Blank	101
MB 140-49661/1-B	Method Blank	109
MB 140-49702/1-B	Method Blank	96

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-49653/14-B
Matrix: Air
Analysis Batch: 49858

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49653

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		05/10/21 13:24	05/15/21 22:39	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*25 - 150*	*05/10/21 13:24*	*05/15/21 22:39*	*1*

Lab Sample ID: MB 140-49653/1-B
Matrix: Air
Analysis Batch: 49858

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49653

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		05/10/21 13:24	05/15/21 20:36	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*92*		*25 - 150*	*05/10/21 13:24*	*05/15/21 20:36*	*1*

Lab Sample ID: LCS 140-49653/2-B
Matrix: Air
Analysis Batch: 49858

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49653

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.02153		ug/Sample		108	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*91*		*25 - 150*

Lab Sample ID: LCSD 140-49653/3-B
Matrix: Air
Analysis Batch: 49858

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49653

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02108		ug/Sample		105	60 - 140	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*95*		*25 - 150*

Lab Sample ID: MB 140-49661/14-B
Matrix: Air
Analysis Batch: 49797

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49661

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		05/10/21 14:43	05/13/21 15:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*101*		*25 - 150*	*05/10/21 14:43*	*05/13/21 15:26*	*1*

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

Lab Sample ID: MB 140-49661/1-B
Matrix: Air
Analysis Batch: 49797

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49661

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		05/10/21 14:43	05/13/21 13:05	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*109*		*25 - 150*	*05/10/21 14:43*	*05/13/21 13:05*	*1*

Lab Sample ID: LCS 140-49661/2-B
Matrix: Air
Analysis Batch: 49797

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49661

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0100	0.01039		ug/Sample		104	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*102*		*25 - 150*

Lab Sample ID: LCSD 140-49661/3-B
Matrix: Air
Analysis Batch: 49797

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49661

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.01003		ug/Sample		100	60 - 140	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*105*		*25 - 150*

Lab Sample ID: MB 140-49702/1-B
Matrix: Air
Analysis Batch: 49885

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49702

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		05/11/21 09:02	05/17/21 16:09	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*96*		*25 - 150*	*05/11/21 09:02*	*05/17/21 16:09*	*1*

Lab Sample ID: LCS 140-49702/2-B
Matrix: Air
Analysis Batch: 49885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49702

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.02188		ug/Sample		109	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*87*		*25 - 150*

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

Lab Sample ID: LCSD 140-49702/3-B
Matrix: Air
Analysis Batch: 49885

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49702

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02189		ug/Sample		109	60 - 140	0	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*95*		*25 - 150*

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

LCMS

Prep Batch: 49653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23013-1	M-1476,1477 PPA CB OUTLET R1 OTM-45 FH	Total/NA	Air	None	
140-23013-5	M-1483,1484 PPA CB OUTLET R2 OTM-45 FH	Total/NA	Air	None	
140-23013-9	M-1490,1491 PPA CB OUTLET R3 OTM-45 FH	Total/NA	Air	None	
MB 140-49653/14-B	Method Blank	Total/NA	Air	None	
MB 140-49653/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49653/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49653/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 49661

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23013-3	M-1480 PPA CB OUTLET R1 OTM-45 IMPINGEF	Total/NA	Air	None	
140-23013-7	M-1487 PPA CB OUTLET R2 OTM-45 IMPINGEF	Total/NA	Air	None	
140-23013-11	M-1494 PPA CB OUTLET R3 OTM-45 IMPINGEF	Total/NA	Air	None	
MB 140-49661/14-B	Method Blank	Total/NA	Air	None	
MB 140-49661/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49661/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49661/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 49702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23013-2	M-1478,1479,1481 PPA CB OUTLET R1 OTM-45	Total/NA	Air	None	
140-23013-4	M-1482 PPA CB OUTLET R1 OTM-45 BREAKTH	Total/NA	Air	None	
140-23013-6	M-1485,1486,1488 PPA CB OUTLET R2 OTM-45	Total/NA	Air	None	
140-23013-8	M-1489 PPA CB OUTLET R2 OTM-45 BREAKTH	Total/NA	Air	None	
140-23013-10	M-1492,1493,1495 PPA CB OUTLET R3 OTM-45	Total/NA	Air	None	
140-23013-12	M-1496 PPA CB OUTLET R3 OTM-45 BREAKTH	Total/NA	Air	None	
MB 140-49702/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49702/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49702/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 49725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23013-3	M-1480 PPA CB OUTLET R1 OTM-45 IMPINGEF	Total/NA	Air	Split	49661
140-23013-7	M-1487 PPA CB OUTLET R2 OTM-45 IMPINGEF	Total/NA	Air	Split	49661
140-23013-11	M-1494 PPA CB OUTLET R3 OTM-45 IMPINGEF	Total/NA	Air	Split	49661
MB 140-49661/14-B	Method Blank	Total/NA	Air	Split	49661
MB 140-49661/1-B	Method Blank	Total/NA	Air	Split	49661
LCS 140-49661/2-B	Lab Control Sample	Total/NA	Air	Split	49661
LCSD 140-49661/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49661

Cleanup Batch: 49746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23013-1	M-1476,1477 PPA CB OUTLET R1 OTM-45 FH	Total/NA	Air	Split	49653
140-23013-5	M-1483,1484 PPA CB OUTLET R2 OTM-45 FH	Total/NA	Air	Split	49653
140-23013-9	M-1490,1491 PPA CB OUTLET R3 OTM-45 FH	Total/NA	Air	Split	49653
MB 140-49653/14-B	Method Blank	Total/NA	Air	Split	49653
MB 140-49653/1-B	Method Blank	Total/NA	Air	Split	49653
LCS 140-49653/2-B	Lab Control Sample	Total/NA	Air	Split	49653
LCSD 140-49653/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49653

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

LCMS

Analysis Batch: 49797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23013-3	M-1480 PPA CB OUTLET R1 OTM-45 IMPINGEF	Total/NA	Air	537 (modified)	49725
140-23013-7	M-1487 PPA CB OUTLET R2 OTM-45 IMPINGEF	Total/NA	Air	537 (modified)	49725
140-23013-11	M-1494 PPA CB OUTLET R3 OTM-45 IMPINGEF	Total/NA	Air	537 (modified)	49725
MB 140-49661/14-B	Method Blank	Total/NA	Air	537 (modified)	49725
MB 140-49661/1-B	Method Blank	Total/NA	Air	537 (modified)	49725
LCS 140-49661/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49725
LCSD 140-49661/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49725

Cleanup Batch: 49805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23013-2	M-1478,1479,1481 PPA CB OUTLET R1 OTM-45	Total/NA	Air	Split	49702
140-23013-4	M-1482 PPA CB OUTLET R1 OTM-45 BREAKTH	Total/NA	Air	Split	49702
140-23013-6	M-1485,1486,1488 PPA CB OUTLET R2 OTM-45	Total/NA	Air	Split	49702
140-23013-8	M-1489 PPA CB OUTLET R2 OTM-45 BREAKTH	Total/NA	Air	Split	49702
140-23013-10	M-1492,1493,1495 PPA CB OUTLET R3 OTM-45	Total/NA	Air	Split	49702
140-23013-12	M-1496 PPA CB OUTLET R3 OTM-45 BREAKTH	Total/NA	Air	Split	49702
MB 140-49702/1-B	Method Blank	Total/NA	Air	Split	49702
LCS 140-49702/2-B	Lab Control Sample	Total/NA	Air	Split	49702
LCSD 140-49702/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49702

Analysis Batch: 49858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23013-1	M-1476,1477 PPA CB OUTLET R1 OTM-45 FH	Total/NA	Air	537 (modified)	49746
140-23013-5	M-1483,1484 PPA CB OUTLET R2 OTM-45 FH	Total/NA	Air	537 (modified)	49746
140-23013-9	M-1490,1491 PPA CB OUTLET R3 OTM-45 FH	Total/NA	Air	537 (modified)	49746
MB 140-49653/14-B	Method Blank	Total/NA	Air	537 (modified)	49746
MB 140-49653/1-B	Method Blank	Total/NA	Air	537 (modified)	49746
LCS 140-49653/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49746
LCSD 140-49653/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49746

Analysis Batch: 49885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23013-2	M-1478,1479,1481 PPA CB OUTLET R1 OTM-45	Total/NA	Air	537 (modified)	49805
140-23013-4	M-1482 PPA CB OUTLET R1 OTM-45 BREAKTH	Total/NA	Air	537 (modified)	49805
140-23013-6	M-1485,1486,1488 PPA CB OUTLET R2 OTM-45	Total/NA	Air	537 (modified)	49805
140-23013-8	M-1489 PPA CB OUTLET R2 OTM-45 BREAKTH	Total/NA	Air	537 (modified)	49805
140-23013-10	M-1492,1493,1495 PPA CB OUTLET R3 OTM-45	Total/NA	Air	537 (modified)	49805
140-23013-12	M-1496 PPA CB OUTLET R3 OTM-45 BREAKTH	Total/NA	Air	537 (modified)	49805
MB 140-49702/1-B	Method Blank	Total/NA	Air	537 (modified)	49805
LCS 140-49702/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49805
LCSD 140-49702/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49805

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

Client Sample ID: M-1476,1477 PPA CB OUTLET R1 OTM-45 FH

Lab Sample ID: 140-23013-1

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	102 mL	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			51 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		10			49858	05/15/21 22:48	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1478,1479,1481 PPA CB OUTLET R1 OTM-45 BH

Lab Sample ID: 140-23013-2

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	49702	05/11/21 09:02	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49805	05/13/21 14:45	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		20			49885	05/17/21 16:35	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1480 PPA CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23013-3

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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			0.00667 Sample	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 15:34	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1482 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23013-4

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	49702	05/11/21 09:02	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49805	05/13/21 14:45	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 16:44	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1483,1484 PPA CB OUTLET R2 OTM-45 FH
Lab Sample ID: 140-23013-5

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30

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	93 mL	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			47 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		10			49858	05/15/21 22:57	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1485,1486,1488 PPA CB OUTLET R2 OTM-45 BH
Lab Sample ID: 140-23013-6

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30

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	49702	05/11/21 09:02	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49805	05/13/21 14:45	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 16:53	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1487 PPA CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-23013-7

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00645 Sample	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 15:43	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1489 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-23013-8

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30

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	49702	05/11/21 09:02	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49805	05/13/21 14:45	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 17:01	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1490,1491 PPA CB OUTLET R3 OTM-45 FH
Lab Sample ID: 140-23013-9

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30

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	135 mL	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			68 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		5			49858	05/15/21 23:06	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1492,1493,1495 PPA CB OUTLET R3 OTM-45 BH
Lab Sample ID: 140-23013-10

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30

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	49702	05/11/21 09:02	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49805	05/13/21 14:45	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		10			49885	05/17/21 17:28	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1494 PPA CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-23013-11

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00678 Sample	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 15:52	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: M-1496 PPA CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-23013-12

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30

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	49702	05/11/21 09:02	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49805	05/13/21 14:45	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 17:37	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49653/14-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	50 mL	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 22:39	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49653/1-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	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 20:36	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49661/14-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	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 15:26	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49661/1-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	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 13:05	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49702/1-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	49702	05/11/21 09:02	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49805	05/13/21 14:45	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 16:09	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49653/2-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			1 Sample	50 mL	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 20:45	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49661/2-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			1 Sample	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 13:14	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49702/2-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			1 Sample	360 mL	49702	05/11/21 09:02	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49805	05/13/21 14:45	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 16:17	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49653/3-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	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 20:54	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49661/3-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	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 13:22	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Job ID: 140-23013-1
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49702/3-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	49702	05/11/21 09:02	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49805	05/13/21 14:45	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 16:26	JRC	TAL KNX
	Instrument ID: LCA									

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
Job ID: 140-23013-1
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Laboratory: Eurofins TestAmerica, 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	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-22
Colorado	State	TN00009	02-28-22
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	07-01-21
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	10-31-21
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-31-22
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-22
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-22
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-01-22
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	01-02-22
West Virginia DEP	State	345	04-30-22
Wisconsin	State	998044300	08-31-21

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL KNX
None	Leaching Procedure	TAL SOP	TAL KNX
None	Leaching Procedure for Condensate	TAL SOP	TAL KNX
None	Leaching Procedure for Filter	TAL SOP	TAL KNX
Split	Source Air Split	None	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Outlet - OTM-45 HFPO-DA

Job ID: 140-23013-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-23013-1	M-1476,1477 PPA CB OUTLET R1 OTM-45 FH	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-2	M-1478,1479,1481 PPA CB OUTLET R1 OTM-45 BH	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-3	M-1480 PPA CB OUTLET R1 OTM-45 IMPINGER 1,2&3 COND	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-4	M-1482 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-5	M-1483,1484 PPA CB OUTLET R2 OTM-45 FH	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-6	M-1485,1486,1488 PPA CB OUTLET R2 OTM-45 BH	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-7	M-1487 PPA CB OUTLET R2 OTM-45 IMPINGER 1,2&3 COND	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-8	M-1489 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-9	M-1490,1491 PPA CB OUTLET R3 OTM-45 FH	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-10	M-1492,1493,1495 PPA CB OUTLET R3 OTM-45 BH	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-11	M-1494 PPA CB OUTLET R3 OTM-45 IMPINGER 1,2&3 COND	Air	05/06/21 00:00	05/08/21 11:30	
140-23013-12	M-1496 PPA CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/06/21 00:00	05/08/21 11:30	

Request for Analysis/Chain-of-Custody – RFA/COC #006
The Chemours Company – Fayetteville NC
PPA Carbon Bed Outlet

eurofins | Environment Testing TestAmerica

Project Identification:	Chemours Emissions Test
Client Name:	The Chemours Company FC, LLC
Client Contact:	Christel Compton Office: (910) 678-1213 Cell: (910) 975-3386
TestAmerica Project Manager:	Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

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, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Packag	140-23013 Chain of Custody

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	Hand Deliver

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:	Preservation Requirements:
HFPO-DA (CAS No. 13252-13-6) & PFOA (CAS No. 335-67-1)	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-1476 PPA CB Outlet R1 OTM-45 Filter (Combine with *M-1477*)	1	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.
M-1477 PPA CB Outlet R1 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with *M-1476*)	1	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the Filter extraction.
M-1478 PPA CB Outlet R1 OTM-45 XAD-2 Resin Tube	1	5/6/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. 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 HFPO-DA and PFOA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-1479 PPA CB Outlet R1 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *M-1478*)	1	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
M-1480 PPA CB Outlet R1 OTM-45 Impingers 1,2 & 3 Condensate	1	5/6/21		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Analyze for HFPO-DA and PFOA.
M-1481 PPA CB Outlet R1 OTM-45 Impinger Glassware MeOH Rinse (Combine with *M-1478*)	1	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
M-1482 PPA CB Outlet R1 OTM-45 Breakthrough XAD-2 Resin Tube	1	5/6/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.
M-1483 PPA CB Outlet R2 OTM-45 Filter (Combine with *M-1484*)	2	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.
M-1484 PPA CB Outlet R2 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with *M-1483*)	2	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-1485 PPA CB Outlet R2 OTM-45 XAD-2 Resin Tube	2	5/6/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. 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 HFPO-DA and PFOA.
M-1486 PPA CB Outlet R2 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *M-1485*)	2	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
M-1487 PPA CB Outlet R2 OTM-45 Impingers 1,2 & 3 Condensate	2	5/6/21		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Analyze for HFPO-DA and PFOA.
M-1488 PPA CB Outlet R2 OTM-45 Impinger Glassware MeOH Rinse (Combine with *M-1485*)	2	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
M-1489 PPA CB Outlet R2 OTM-45 Breakthrough XAD-2 Resin Tube	2	5/6/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.
M-1490 PPA CB Outlet R3 OTM-45 Filter (Combine with *M-1491*)	3	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-1491 PPA CB Outlet R3 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with *M-1490*)	3	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the Filter extraction.
M-1492 PPA CB Outlet R3 OTM-45 XAD-2 Resin Tube	3	5/6/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. 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 HFPO-DA and PFOA.
M-1493 PPA CB Outlet R3 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *M-1492*	3	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
M-1494 PPA CB Outlet R3 OTM-45 Impingers 1,2 & 3 Condensate	3	5/6/21		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Analyze for HFPO-DA and PFOA.
M-1495 PPA CB Outlet R3 OTM-45 Impinger Glassware MeOH Rinse (Combine with *M-1492*)	3	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
M-1496 PPA CB Outlet R3 OTM-45 Breakthrough XAD-2 Resin Tube	3	5/6/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.

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 0.4/CTD.5°C
(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:

	Name	Company	Date/Time
Relinquished By:	Patrick Murphy	Alliance	5/7/21
Accepted By:	Doug Cahill	ETA KNOX	5/7/21 1820
Relinquished By:	Doug Cahill	ETA KNOX	5/8/21 1130
Accepted By:	[illegible]	ETA KNX	5-8-21 11:30
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

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

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
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 : 6071 Correction factor: +0.1°C	✓			☐ **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)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
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

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

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

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 5-8-21

QA026R32.doc, 062719

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-23012-1
Client Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

For:
The Chemours Company FC, LLC
c/o AECOM
Sabre Building, Suite 300
4051 Ogletown Road
Newark, Delaware 19713

Attn: Michael Aucoin

Authorized for release by:
5/19/2021 4:04:20 PM

Courtney Adkins, Project Manager II
(865)291-3019
courtney.adkins@eurofinset.com

Table of Contents

Definitions/Glossary

Client: The Chemours Company FC, LLC
Job ID: 140-23012-1
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Qualifiers

LCMS

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

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

Job ID: 140-23012-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-23012-1

Sample Receipt

The samples were received on 5/8/2021 11:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.8º C.

LCMS

LC/MS/MS Sampling Train Preparation and Analysis: The sampling train components are extracted and analyzed for Per- and Polyfluorinated Alkyl Substances (PFAS) using Eurofins TestAmerica Knoxville standard operating procedures KNOX-OP-0026 and KNOX-LC-0007.

The sampling trains are prepared as four analytical fractions: The particulate filter and front half of the filter holder, nozzle and probe solvent rinses are combined for one analytical fraction. The XAD-2 resin trap and back half of the filter holder, coil condenser and connecting glassware solvent rinses are also combined as a separate analytical fraction. The condensate, impinger contents and their related glassware DI water rinses make up the third analytical fraction. The breakthrough XAD module makes up the fourth analytical fraction.

The filters and XAD components are spiked with isotope dilution internal standards and the components are extracted with methanol/ammonium hydroxide by shaking for at least 18 hours. The extracts are concentrated to 10 mL and analyzed by HPLC/MS/MS. The condensates are spiked with the isotope dilution internal standards and extracted using either Solid-Phase Extraction (SPE) or diluting the water sample for analysis. Each extract at its final volume is 80:20 methanol:water

Sample results were calculated using the following equation:

Result, ηg/sample = (on-column concentration, ηg/mL) × (nominal final volume of extract (10 mL) / 1 sample) × DF × SF

Where:
DF = Instrument dilution factor
SF = Extraction Split Factor = (final volume of extract in the initial extraction batch / initial volume of extract in the “Split” batch)
For condensate, if less than the entire sample is extracted, the fraction of sample used replaces “1 sample”

Method 537 (modified): 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): E-2962,2963 CB INLET R1 OTM-45 FH (140-23012-1), E-2969,2970 CB INLET R2 OTM-45 FH (140-23012-5) and E-2976,2977 CB INLET R3 OTM-45 FH (140-23012-9). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: E-2962,2963 CB INLET R1 OTM-45 FH (140-23012-1), E-2969,2970 CB INLET R2 OTM-45 FH (140-23012-5) and E-2976,2977 CB INLET R3 OTM-45 FH (140-23012-9). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: E-2964,2965,2967 CB INLET R1 OTM-45 BH (140-23012-2), E-2971,2972,2974 CB INLET R2 OTM-45 BH (140-23012-6) and E-2978,2979,2981 CB INLET R3 OTM-45 BH (140-23012-10). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): 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): E-2964,2965,2967 CB INLET R1 OTM-45 BH (140-23012-2), E-2971,2972,2974 CB INLET R2 OTM-45 BH (140-23012-6) and E-2978,2979,2981 CB INLET R3 OTM-45 BH (140-23012-10). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

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

Organic Prep

Job ID: 140-23012-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

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

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

Client Sample ID: E-2962,2963 CB INLET R1 OTM-45 FH — Lab Sample ID: 140-23012-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	223		2.50	1.45	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2964,2965,2967 CB INLET R1 OTM-45 BH — Lab Sample ID: 140-23012-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	127		2.88	2.52	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2966 CB INLET R1 OTM-45 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-23012-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0337	J	0.0737	0.0122	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2968 CB INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-23012-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00358		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2969,2970 CB INLET R2 OTM-45 FH — Lab Sample ID: 140-23012-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	270		2.50	1.45	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2971,2972,2974 CB INLET R2 OTM-45 BH — Lab Sample ID: 140-23012-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	130		2.88	2.52	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2973 CB INLET R2 OTM-45 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-23012-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0388	J	0.0750	0.0124	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2975 CB INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-23012-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00411		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2976,2977 CB INLET R3 OTM-45 FH — Lab Sample ID: 140-23012-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	248		2.50	1.45	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2978,2979,2981 CB INLET R3 OTM-45 BH — Lab Sample ID: 140-23012-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	66.0		2.88	2.52	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

Client Sample ID: E-2980 CB INLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23012-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0245	J	0.0750	0.0124	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: E-2982 CB INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23012-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00407		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: E-2962,2963 CB INLET R1 OTM-45 FH
Lab Sample ID: 140-23012-1

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	223		2.50	1.45	ug/Sample		05/10/21 13:24	05/15/21 21:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*25 - 150*	*05/10/21 13:24*	*05/15/21 21:55*	*1*

Client Sample ID: E-2964,2965,2967 CB INLET R1 OTM-45 BH
Lab Sample ID: 140-23012-2

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	127		2.88	2.52	ug/Sample		05/10/21 09:44	05/17/21 14:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*102*		*25 - 150*	*05/10/21 09:44*	*05/17/21 14:48*	*1*

Client Sample ID: E-2966 CB INLET R1 OTM-45 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-23012-3

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0337	J	0.0737	0.0122	ug/Sample		05/10/21 14:43	05/13/21 14:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*107*		*25 - 150*	*05/10/21 14:43*	*05/13/21 14:59*	*1*

Client Sample ID: E-2968 CB INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-23012-4

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00358		0.00160	0.00140	ug/Sample		05/10/21 09:44	05/17/21 14:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*80*		*25 - 150*	*05/10/21 09:44*	*05/17/21 14:57*	*1*

Client Sample ID: E-2969,2970 CB INLET R2 OTM-45 FH
Lab Sample ID: 140-23012-5

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	270		2.50	1.45	ug/Sample		05/10/21 13:24	05/15/21 22:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*93*		*25 - 150*	*05/10/21 13:24*	*05/15/21 22:22*	*1*

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

Client Sample ID: E-2971,2972,2974 CB INLET R2 OTM-45 BH

Lab Sample ID: 140-23012-6

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	130		2.88	2.52	ug/Sample		05/10/21 09:44	05/17/21 15:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*94*		*25 - 150*	*05/10/21 09:44*	*05/17/21 15:06*	*1*

Client Sample ID: E-2973 CB INLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23012-7

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0388	J	0.0750	0.0124	ug/Sample		05/10/21 14:43	05/13/21 15:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*106*		*25 - 150*	*05/10/21 14:43*	*05/13/21 15:08*	*1*

Client Sample ID: E-2975 CB INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23012-8

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00411		0.00160	0.00140	ug/Sample		05/10/21 09:44	05/17/21 15:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*82*		*25 - 150*	*05/10/21 09:44*	*05/17/21 15:15*	*1*

Client Sample ID: E-2976,2977 CB INLET R3 OTM-45 FH

Lab Sample ID: 140-23012-9

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	248		2.50	1.45	ug/Sample		05/10/21 13:24	05/15/21 22:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*25 - 150*	*05/10/21 13:24*	*05/15/21 22:31*	*1*

Client Sample ID: E-2978,2979,2981 CB INLET R3 OTM-45 BH

Lab Sample ID: 140-23012-10

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	66.0		2.88	2.52	ug/Sample		05/10/21 09:44	05/17/21 15:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*102*		*25 - 150*	*05/10/21 09:44*	*05/17/21 15:42*	*1*

Client Sample ID: E-2980 CB INLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23012-11

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0245	J	0.0750	0.0124	ug/Sample		05/10/21 14:43	05/13/21 15:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*107*		*25 - 150*	*05/10/21 14:43*	*05/13/21 15:17*	*1*

Client Sample ID: E-2982 CB INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23012-12

Date Collected: 05/06/21 00:00
Matrix: Air
Date Received: 05/08/21 11:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00407		0.00160	0.00140	ug/Sample		05/10/21 09:44	05/17/21 15:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*81*		*25 - 150*	*05/10/21 09:44*	*05/17/21 15:51*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Job ID: 140-23012-1
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00100	0.000580	ug/Sample
HFPO-DA	0.00160	0.00140	ug/Sample
HFPO-DA	0.00200	0.000330	ug/Sample

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HFPODA (25-150)						
140-23012-1	E-2962,2963 CB INLET R1 OTM	98						
140-23012-2	E-2964,2965,2967 CB INLET R1 OTM-45 BH	102						
140-23012-3	E-2966 CB INLET R1 OTM-45 IMPINGERS 1,2&3 COND	107						
140-23012-4	E-2968 CB INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	80						
140-23012-5	E-2969,2970 CB INLET R2 OTM-45 FH	93						
140-23012-6	E-2971,2972,2974 CB INLET R2 OTM-45 BH	94						
140-23012-7	E-2973 CB INLET R2 OTM-45 IMPINGERS 1,2&3 COND	106						
140-23012-8	E-2975 CB INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	82						
140-23012-9	E-2976,2977 CB INLET R3 OTM-45 FH	100						
140-23012-10	E-2978,2979,2981 CB INLET R3 OTM-45 BH	102						
140-23012-11	E-2980 CB INLET R3 OTM-45 IMPINGERS 1,2&3 COND	107						
140-23012-12	E-2982 CB INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	81						
LCS 140-49635/2-B	Lab Control Sample	90						
LCS 140-49653/2-B	Lab Control Sample	91						
LCS 140-49661/2-B	Lab Control Sample	102						
LCSD 140-49635/3-B	Lab Control Sample Dup	96						
LCSD 140-49653/3-B	Lab Control Sample Dup	95						
LCSD 140-49661/3-B	Lab Control Sample Dup	105						
MB 140-49635/14-B	Method Blank	90						
MB 140-49635/1-B	Method Blank	85						
MB 140-49653/1-B	Method Blank	92						
MB 140-49661/1-B	Method Blank	109						

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-49635/14-B
Matrix: Air
Analysis Batch: 49885

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49635

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		05/10/21 09:44	05/17/21 14:22	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*90*		*25 - 150*	*05/10/21 09:44*	*05/17/21 14:22*	*1*

Lab Sample ID: MB 140-49635/1-B
Matrix: Air
Analysis Batch: 49885

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49635

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		05/10/21 09:44	05/17/21 12:10	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*85*		*25 - 150*	*05/10/21 09:44*	*05/17/21 12:10*	*1*

Lab Sample ID: LCS 140-49635/2-B
Matrix: Air
Analysis Batch: 49885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49635

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.02302		ug/Sample		115	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*90*		*25 - 150*

Lab Sample ID: LCSD 140-49635/3-B
Matrix: Air
Analysis Batch: 49885

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49635

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02216		ug/Sample		111	60 - 140	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*96*		*25 - 150*

Lab Sample ID: MB 140-49653/1-B
Matrix: Air
Analysis Batch: 49858

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49653

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		05/10/21 13:24	05/15/21 20:36	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*92*		*25 - 150*	*05/10/21 13:24*	*05/15/21 20:36*	*1*

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

Lab Sample ID: LCS 140-49653/2-B
Matrix: Air
Analysis Batch: 49858

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49653

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.02153		ug/Sample		108	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*91*		*25 - 150*

Lab Sample ID: LCSD 140-49653/3-B
Matrix: Air
Analysis Batch: 49858

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49653

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02108		ug/Sample		105	60 - 140	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*95*		*25 - 150*

Lab Sample ID: MB 140-49661/1-B
Matrix: Air
Analysis Batch: 49797

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49661

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		05/10/21 14:43	05/13/21 13:05	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*109*		*25 - 150*	*05/10/21 14:43*	*05/13/21 13:05*	*1*

Lab Sample ID: LCS 140-49661/2-B
Matrix: Air
Analysis Batch: 49797

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49661

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0100	0.01039		ug/Sample		104	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*102*		*25 - 150*

Lab Sample ID: LCSD 140-49661/3-B
Matrix: Air
Analysis Batch: 49797

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49661

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.01003		ug/Sample		100	60 - 140	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*105*		*25 - 150*

LCMS

Prep Batch: 49635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-2	E-2964,2965,2967 CB INLET R1 OTM-45 BH	Total/NA	Air	None	
140-23012-4	E-2968 CB INLET R1 OTM-45 BREAKTHROUGH	Total/NA	Air	None	
140-23012-6	E-2971,2972,2974 CB INLET R2 OTM-45 BH	Total/NA	Air	None	
140-23012-8	E-2975 CB INLET R2 OTM-45 BREAKTHROUGH	Total/NA	Air	None	
140-23012-10	E-2978,2979,2981 CB INLET R3 OTM-45 BH	Total/NA	Air	None	
140-23012-12	E-2982 CB INLET R3 OTM-45 BREAKTHROUGH	Total/NA	Air	None	
MB 140-49635/14-B	Method Blank	Total/NA	Air	None	
MB 140-49635/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49635/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49635/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 49653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-1	E-2962,2963 CB INLET R1 OTM-45 FH	Total/NA	Air	None	
140-23012-5	E-2969,2970 CB INLET R2 OTM-45 FH	Total/NA	Air	None	
140-23012-9	E-2976,2977 CB INLET R3 OTM-45 FH	Total/NA	Air	None	
MB 140-49653/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49653/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49653/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 49661

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-3	E-2966 CB INLET R1 OTM-45 IMPINGERS 1,2&	Total/NA	Air	None	
140-23012-7	E-2973 CB INLET R2 OTM-45 IMPINGERS 1,2&	Total/NA	Air	None	
140-23012-11	E-2980 CB INLET R3 OTM-45 IMPINGERS 1,2&	Total/NA	Air	None	
MB 140-49661/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49661/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49661/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 49725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-3	E-2966 CB INLET R1 OTM-45 IMPINGERS 1,2&	Total/NA	Air	Split	49661
140-23012-7	E-2973 CB INLET R2 OTM-45 IMPINGERS 1,2&	Total/NA	Air	Split	49661
140-23012-11	E-2980 CB INLET R3 OTM-45 IMPINGERS 1,2&	Total/NA	Air	Split	49661
MB 140-49661/1-B	Method Blank	Total/NA	Air	Split	49661
LCS 140-49661/2-B	Lab Control Sample	Total/NA	Air	Split	49661
LCSD 140-49661/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49661

Cleanup Batch: 49746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-1	E-2962,2963 CB INLET R1 OTM-45 FH	Total/NA	Air	Split	49653
140-23012-5	E-2969,2970 CB INLET R2 OTM-45 FH	Total/NA	Air	Split	49653
140-23012-9	E-2976,2977 CB INLET R3 OTM-45 FH	Total/NA	Air	Split	49653
MB 140-49653/1-B	Method Blank	Total/NA	Air	Split	49653
LCS 140-49653/2-B	Lab Control Sample	Total/NA	Air	Split	49653
LCSD 140-49653/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49653

Cleanup Batch: 49764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-2	E-2964,2965,2967 CB INLET R1 OTM-45 BH	Total/NA	Air	Split	49635
140-23012-4	E-2968 CB INLET R1 OTM-45 BREAKTHROUGH	Total/NA	Air	Split	49635

LCMS (Continued)

Cleanup Batch: 49764 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-6	E-2971,2972,2974 CB INLET R2 OTM-45 BH	Total/NA	Air	Split	49635
140-23012-8	E-2975 CB INLET R2 OTM-45 BREAKTHROUGH	Total/NA	Air	Split	49635
140-23012-10	E-2978,2979,2981 CB INLET R3 OTM-45 BH	Total/NA	Air	Split	49635
140-23012-12	E-2982 CB INLET R3 OTM-45 BREAKTHROUGH	Total/NA	Air	Split	49635
MB 140-49635/14-B	Method Blank	Total/NA	Air	Split	49635
MB 140-49635/1-B	Method Blank	Total/NA	Air	Split	49635
LCS 140-49635/2-B	Lab Control Sample	Total/NA	Air	Split	49635
LCSD 140-49635/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49635

Analysis Batch: 49797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-3	E-2966 CB INLET R1 OTM-45 IMPINGERS 1,2&	Total/NA	Air	537 (modified)	49725
140-23012-7	E-2973 CB INLET R2 OTM-45 IMPINGERS 1,2&	Total/NA	Air	537 (modified)	49725
140-23012-11	E-2980 CB INLET R3 OTM-45 IMPINGERS 1,2&	Total/NA	Air	537 (modified)	49725
MB 140-49661/1-B	Method Blank	Total/NA	Air	537 (modified)	49725
LCS 140-49661/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49725
LCSD 140-49661/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49725

Analysis Batch: 49858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-1	E-2962,2963 CB INLET R1 OTM-45 FH	Total/NA	Air	537 (modified)	49859
140-23012-5	E-2969,2970 CB INLET R2 OTM-45 FH	Total/NA	Air	537 (modified)	49859
140-23012-9	E-2976,2977 CB INLET R3 OTM-45 FH	Total/NA	Air	537 (modified)	49859
MB 140-49653/1-B	Method Blank	Total/NA	Air	537 (modified)	49746
LCS 140-49653/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49746
LCSD 140-49653/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49746

Cleanup Batch: 49859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-1	E-2962,2963 CB INLET R1 OTM-45 FH	Total/NA	Air	Dilution	49746
140-23012-5	E-2969,2970 CB INLET R2 OTM-45 FH	Total/NA	Air	Dilution	49746
140-23012-9	E-2976,2977 CB INLET R3 OTM-45 FH	Total/NA	Air	Dilution	49746

Analysis Batch: 49885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-2	E-2964,2965,2967 CB INLET R1 OTM-45 BH	Total/NA	Air	537 (modified)	49886
140-23012-4	E-2968 CB INLET R1 OTM-45 BREAKTHROUGH	Total/NA	Air	537 (modified)	49764
140-23012-6	E-2971,2972,2974 CB INLET R2 OTM-45 BH	Total/NA	Air	537 (modified)	49886
140-23012-8	E-2975 CB INLET R2 OTM-45 BREAKTHROUGH	Total/NA	Air	537 (modified)	49764
140-23012-10	E-2978,2979,2981 CB INLET R3 OTM-45 BH	Total/NA	Air	537 (modified)	49886
140-23012-12	E-2982 CB INLET R3 OTM-45 BREAKTHROUGH	Total/NA	Air	537 (modified)	49764
MB 140-49635/14-B	Method Blank	Total/NA	Air	537 (modified)	49764
MB 140-49635/1-B	Method Blank	Total/NA	Air	537 (modified)	49764
LCS 140-49635/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49764
LCSD 140-49635/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49764

Cleanup Batch: 49886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23012-2	E-2964,2965,2967 CB INLET R1 OTM-45 BH	Total/NA	Air	Dilution	49764
140-23012-6	E-2971,2972,2974 CB INLET R2 OTM-45 BH	Total/NA	Air	Dilution	49764
140-23012-10	E-2978,2979,2981 CB INLET R3 OTM-45 BH	Total/NA	Air	Dilution	49764

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

Client Sample ID: E-2962,2963 CB INLET R1 OTM-45 FH

Lab Sample ID: 140-23012-1

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	148 mL	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			74 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Cleanup	Dilution			4 uL	10000 uL	49859	05/15/21 18:33	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 21:55	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: E-2964,2965,2967 CB INLET R1 OTM-45 BH

Lab Sample ID: 140-23012-2

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	49886	05/17/21 10:49	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 14:48	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: E-2966 CB INLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23012-3

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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			0.00678 Sample	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 14:59	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: E-2968 CB INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23012-4

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 14:57	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

Client Sample ID: E-2969,2970 CB INLET R2 OTM-45 FH

Lab Sample ID: 140-23012-5

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	142 mL	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			71 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Cleanup	Dilution			4 uL	10000 uL	49859	05/15/21 18:33	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 22:22	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: E-2971,2972,2974 CB INLET R2 OTM-45 BH

Lab Sample ID: 140-23012-6

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	49886	05/17/21 10:49	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 15:06	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: E-2973 CB INLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23012-7

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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			0.00667 Sample	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 15:08	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: E-2975 CB INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23012-8

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 15:15	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

Client Sample ID: E-2976,2977 CB INLET R3 OTM-45 FH

Lab Sample ID: 140-23012-9

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	126 mL	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			63 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Cleanup	Dilution			4 uL	10000 uL	49859	05/15/21 18:33	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 22:31	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: E-2978,2979,2981 CB INLET R3 OTM-45 BH

Lab Sample ID: 140-23012-10

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	49886	05/17/21 10:49	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 15:42	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: E-2980 CB INLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23012-11

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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			0.00667 Sample	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 15:17	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: E-2982 CB INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23012-12

Date Collected: 05/06/21 00:00
Date Received: 05/08/21 11:30

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	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 15:51	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49635/14-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	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 14:22	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49635/1-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	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 12:10	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49653/1-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	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 20:36	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49661/1-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	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 13:05	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49635/2-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			1 Sample	360 mL	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 12:18	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49653/2-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			1 Sample	50 mL	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 20:45	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49661/2-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			1 Sample	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 13:14	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49635/3-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	49635	05/10/21 09:44	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	49764	05/12/21 13:02	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49885	05/17/21 12:27	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49653/3-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	49653	05/10/21 13:24	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49746	05/12/21 09:53	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49858	05/15/21 20:54	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49661/3-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	10 mL	49661	05/10/21 14:43	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49725	05/11/21 15:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49797	05/13/21 13:22	JRC	TAL KNX
	Instrument ID: LCA									

Laboratory References:
TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
Job ID: 140-23012-1
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Laboratory: Eurofins TestAmerica, 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	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-22
Colorado	State	TN00009	02-28-22
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	07-01-21
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	10-31-21
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-31-22
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-22
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-22
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-01-22
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	01-02-22
West Virginia DEP	State	345	04-30-22
Wisconsin	State	998044300	08-31-21

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

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

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA CB Inlet - OTM-45 HFPO-DA

Job ID: 140-23012-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-23012-1	E-2962,2963 CB INLET R1 OTM-45 FH	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-2	E-2964,2965,2967 CB INLET R1 OTM-45 BH	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-3	E-2966 CB INLET R1 OTM-45 IMPINGERS 1,2& COND	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-4	E-2968 CB INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-5	E-2969,2970 CB INLET R2 OTM-45 FH	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-6	E-2971,2972,2974 CB INLET R2 OTM-45 BH	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-7	E-2973 CB INLET R2 OTM-45 IMPINGERS 1,2& COND	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-8	E-2975 CB INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-9	E-2976,2977 CB INLET R3 OTM-45 FH	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-10	E-2978,2979,2981 CB INLET R3 OTM-45 BH	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-11	E-2980 CB INLET R3 OTM-45 IMPINGERS 1,2& COND	Air	05/06/21 00:00	05/08/21 11:30	
140-23012-12	E-2982 CB INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/06/21 00:00	05/08/21 11:30	

Project Identification:	**Chemours Emissions Test**
Client Name:	The Chemours Company FC, LLC
Client Contact:	Christel Compton Office: (910) 678-1213 Cell: (910) 975-3386
TestAmerica Project Manager:	Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

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, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Packa	

140-23012 Chain of Custody

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	Hand Deliver

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:**	**Preservation Requirements:**
HFPO-DA (CAS No. 13252-13-6) & PFOA (CAS No. 335-67-1)	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field Sample No./Sample Coding ID	**Run No.**	**Sample Collection Date**	**Project QC Require-ments**	**Sample Bottle/ Container**	**Sample Type/Analysis**	**Analytical Specifications**
E-2962 PPA CB Inlet R1 OTM-45 Filter (Combine with *E-2963*)	1	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.
E-2963 PPA CB Inlet R1 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with *E-2962*)	1	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the Filter extraction.
E-2964 PPA CB Inlet R1 OTM-45 XAD-2 Resin Tube	1	5/6/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. 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 HFPO-DA and PFOA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-2965 PPA CB Inlet R1 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-2964*)	1	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
E-2966 PPA CB Inlet R1 OTM-45 Impingers 1,2 & 3 Condensate	1	5/6/21		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Analyze for HFPO-DA and PFOA.
E-2967 PPA CB Inlet R1 OTM-45 Impinger Glassware MeOH Rinse (Combine with *E-2964*)	1	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
E-2968 PPA CB Inlet R1 OTM-45 Breakthrough XAD-2 Resin Tube	1	5/6/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.
E-2969 PPA CB Inlet R2 OTM-45 Filter (Combine with *E-2970*)	2	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.
E-2970 PPA CB Inlet R2 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with *E-2969*)	2	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-2971 PPA CB Inlet R2 OTM-45 XAD-2 Resin Tube	2	5/6/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. 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 HFPO-DA and PFOA.
E-2972 PPA CB Inlet R2 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-2971*)	2	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
E-2973 PPA CB Inlet R2 OTM-45 Impingers 1,2 & 3 Condensate	2	5/6/21		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Analyze for HFPO-DA and PFOA.
E-2974 PPA CB Inlet R2 OTM-45 Impinger Glassware MeOH Rinse (Combine with *E-2971*)	2	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
E-2975 PPA CB Inlet R2 OTM-45 Breakthrough XAD-2 Resin Tube	2	5/6/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.
E-2976 PPA CB Inlet R3 OTM-45 Filter (Combine with *E-2977*)	3	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-2977 PPA CB Inlet R3 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with *E-2976*)	3	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the Filter extraction.
E-2978 PPA CB Inlet R3 OTM-45 XAD-2 Resin Tube	3	5/6/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. 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 HFPO-DA and PFOA.
E-2979 PPA CB Inlet R3 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-2979*)	3	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
E-2980 PPA CB Inlet R3 OTM-45 Impingers 1,2 & 3 Condensate	3	5/6/21		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Analyze for HFPO-DA and PFOA.
E-2981 PPA CB Inlet R3 OTM-45 Impinger Glassware MeOH Rinse (Combine with *E-2979*)	3	5/6/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
E-2982 PPA CB Inlet R3 OTM-45 Breakthrough XAD-2 Resin Tube	3	5/6/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA & PFOA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.

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:	AT 0.7 / CT 0.8°C
(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:

	Name	Company	Date/Time
Relinquished By:	Patrick Grady	Alliance	5/7/21
Accepted By:	Doug Cahill	ETA KNOX	5/7/21 1820
Relinquished By:	Doug Cahill	ETA KNOX	5/8/21 1130
Accepted By:	Ryan Johnson	ETA KNX	5-8-21 11:30
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

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

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
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 : SG71 Correction factor: +0.1°C	✓			☐ **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?	✓		✓	☐ **Sample 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)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
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

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

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

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 5·8·21

QA026R32.doc, 062719

Appendix D

QA/QC Data

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Outlet
Project No. 2021-1324O
Parameter HFPO-DA

Date	Nozzle ID	Nozzle Diameter (in.) #1	#2	#3	Dn (Average)	Difference	Criteria	Material
5/6/21	G-1	0.262	0.262	0.262	0.262	0.000	≤ 0.004 in.	glass

Date	Pitot ID	Evidence of damage?	Evidence of mis-alignment?	Calibration or Repair required?
5/6/21	P4-1	no	no	no

Date	Meter Box ID	Positive Pressure Leak Check
5/6/21	11	Pass

QA/QC Data

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source PPA Carbon Bed Inlet
Project No. 2021-1324O
Parameter HFPO-DA

Date	Nozzle ID	Nozzle Diameter (in.) #1	#2	#3	Dn (Average)	Difference	Criteria	Material
5/6/21	G-2	0.258	0.258	0.258	0.258	0.000	≤ 0.004 in.	glass

Date	Pitot ID	Evidence of damage?	Evidence of mis-alignment?	Calibration or Repair required?
5/6/21	P4-3	no	no	no

Date	Meter Box ID	Positive Pressure Leak Check
5/6/21	7	Pass

Pre-test Equipment Calibration Data

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the **GREEN** cells, YELLOW cells are calculated.

DATE:	1/29/2021	METER SERIAL #:	7	BAROMETRIC PRESSURE (in Hg):	INITIAL 29.69	FINAL 29.69	AVG (P_{bar}) 29.69
METER PART #:		CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	$DH_@$
11	1	0.306	22	847.775	855.766	7.991	56	60	57	59	58	58.5	20.00	0.5	8.0865	8.0014	0.989			1.78
	2	0.306																		
	3	0.306																		
																AVG =	0.989	-0.47	-0.19	
16	1	0.4268	20	855.766	861.315	5.549	54	58	58	57	57	57.5	10.00	0.97	5.6327	5.5909	0.993			1.77
	2	0.4268																		
	3	0.4268																		
																AVG =	0.993	-0.15	0.31	
18	1	0.4961	20	861.315	867.774	6.459	54	58	59	57	58	58	10.00	1.3	6.5554	6.4987	0.991			1.76
	2	0.4961																		
	3	0.4961																		
																AVG =	0.991	-0.28	-0.12	
26	1	0.7131	16	867.774	877.009	9.235	54	59	61	58	58	59	10.00	2.8	9.3894	9.3414	0.995			1.84
	2	0.7131																		
	3	0.7131																		
																AVG =	0.995	0.08	0.36	
31	1	0.8358	15.5	877.009	887.745	10.736	54	61	62	58	59	60	10.00	3.9	10.9240	10.9487	1.002			1.86
	2	0.8358																		
	3	0.8358																		
																AVG =	1.002	0.82	1.10	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.994

AVERAGE $DH_@$ = 1.80

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$DH_@ = \left(\frac{0.75\ q}{V_{cr(std)}}\right)^2 DH \left(\frac{V_{m(std)}}{V_m}\right)$$

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the **GREEN** cells, YELLOW cells are calculated.

DATE:	1/13/2021	METER SERIAL #:	MB11	BAROMETRIC PRESSURE (in Hg):	INITIAL 29.78	FINAL 29.78	AVG (P_{bar}) 29.78
METER PART #:		CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	$DH_@$
11	1	0.306																		
	2	0.306	24	982.023	990.0	7.977	67	68	70	68	69	68.75	20.00	0.44	7.9385	7.9414	1.000			1.56
	3	0.306																		
																AVG =	1.000	0.84	1.54	
16	1	0.4268																		
	2	0.4268	23	990.0	995.653	5.653	65	69	70	70	70	69.75	10.00	0.92	5.6217	5.5488	0.987			1.67
	3	0.4268																		
																AVG =	0.987	-0.51	0.18	
18	1	0.4961																		
	2	0.4961	22	995.653	1,002.250	6.597	63	70	70	70	71	70.25	10.00	1.2	6.5589	6.4621	0.985			1.61
	3	0.4961																		
																AVG =	0.985	-0.69	-0.18	
26	1	0.7131																		
	2	0.7131	19.5	2.250	11.645	9.395	62	70	72	71	71	71	10.00	2.6	9.3596	9.2976	0.993			1.69
	3	0.7131																		
																AVG =	0.993	0.13	0.82	
31	1	0.8358																		
	2	0.8358	18	11.645	22.587	10.942	67	71	74	71	72	72	10.00	3.6	10.9070	10.8455	0.994			1.72
	3	0.8358																		
																AVG =	0.994	0.23	0.93	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.992

AVERAGE $DH_@$ = 1.65

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$DH_@ = \left(\frac{0.75\ q}{V_{cr(std)}}\right)^2 DH \left(\frac{V_{m(std)}}{V_m}\right)$$

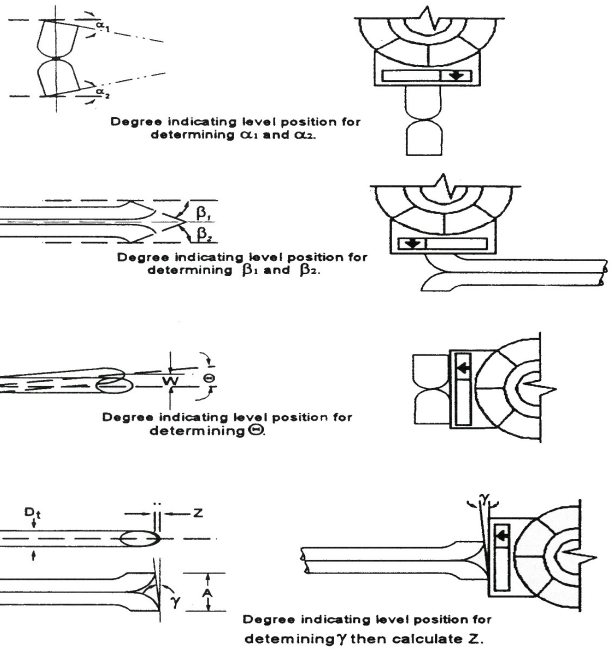
Initial Sample Probe Calibration Form

Probe ID: P4-1/TC-7C Date: 01/28/21 Technician: S. Waters

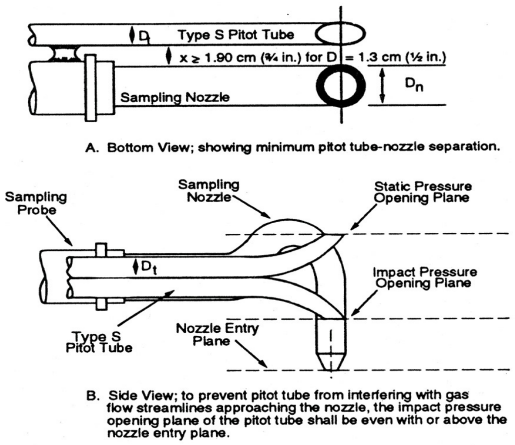
"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 ($-10^o = \alpha_1 = +10^o$)	1
α_2 ($-10^o = \alpha_2 = +10^o$)	0
β_1 ($-5^o = \beta_1 = +5^o$)	1
β_2 ($-5^o = \beta_2 = +5^o$)	1
γ	1
Θ	0
z = A Tan γ (< 0.125")	0.011
W = A Tan Θ (< 0.03125")	0.0000
D_t ($3/16 = D_t = 3/8$")	0.252
A	0.655
$A/2D_t$ ($1.05 = P_A/D_t = 1.5$)	1.300

Source: Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III, Stationary Source-Specific Methods. EPA/600/R-94/038c, September 30, 1994

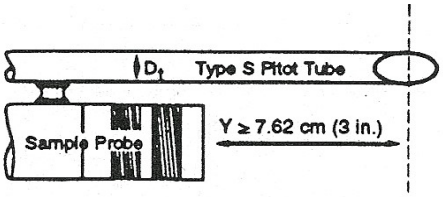


Verification of "S" Type Pitot, Thermocouple and Nozzle Placement



Does X Exceed 0.75 inches? Yes

Does Y Exceed 3 inches? NA



Thermocouple Calibration

	Ice Bath ^oR			Ambient ^oR			Boiling Water ^oR		
	1	2	3	1	2	3	1	2	3
Reference Temp	492	492	492	526	526	526	672	672	672
Thermocouple Temp	492	492	492	525	525	525	672	672	672
Difference (%)	0.0	0.0	0.0	-0.2	-0.2	-0.2	0.0	0.0	0.0

Temperature values must be within 1.5% of reference temperature

I certify that the probe ID P4-1/TC-7C meets or exceeds all specifications, criteria and/or applicable design features and is herby assigned a pitot tube calibration factor C_P of 0.84.

Certified By: S. Waters Date: 01/28/21

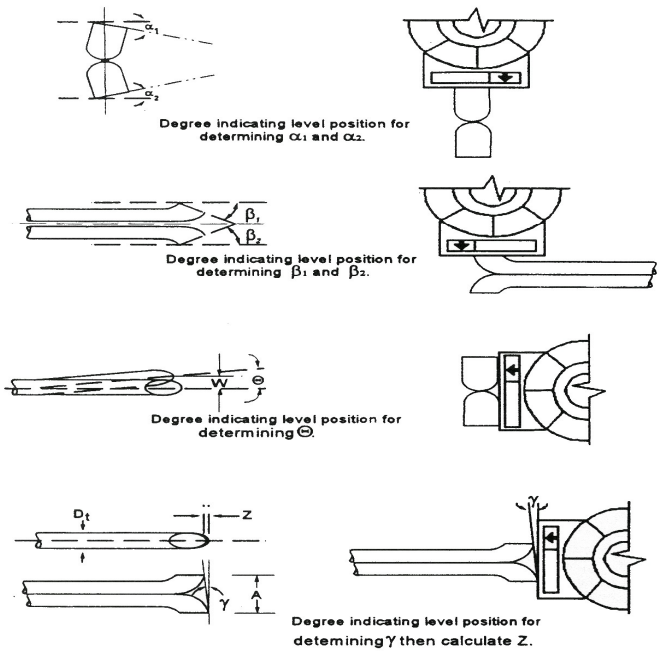
Initial Sample Probe Calibration Form

Probe ID: P4-3/TC-7D Date: 01/28/21 Technician: S. Waters

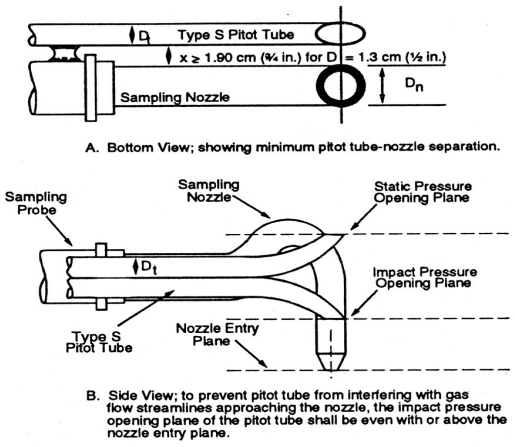
"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 ($-10^o = \alpha_1 = +10^o$)	1
α_2 ($-10^o = \alpha_2 = +10^o$)	0
β_1 ($-5^o = \beta_1 = +5^o$)	1
β_2 ($-5^o = \beta_2 = +5^o$)	1
γ	1
Θ	1
z = A Tan γ (< 0.125")	0.011
W = A Tan Θ (< 0.03125")	0.0110
D_t ($3/16 = D_t = 3/8$")	0.251
A	0.628
$A/2D_t$ ($1.05 = P_A/D_t = 1.5$)	1.251

Source: Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III, Stationary Source-Specific Methods. EPA/600/R-94/038c, September 30, 1994

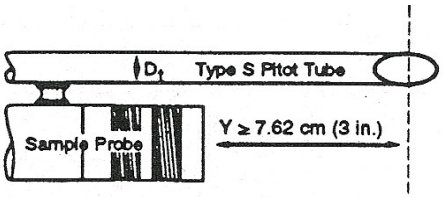


Verification of "S" Type Pitot, Thermocouple and Nozzle Placement



Does X Exceed 0.75 inches? Yes

Does Y Exceed 3 inches? NA



Thermocouple Calibration

	Ice Bath ^oR			Ambient ^oR			Boiling Water ^oR		
	1	2	3	1	2	3	1	2	3
Reference Temp	492	492	492	526	526	526	672	672	672
Thermocouple Temp	493	493	493	525	525	525	670	670	670
Difference (%)	0.2	0.2	0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3

Temperature values must be within 1.5% of reference temperature

I certify that the probe ID P4-3/TC-7D meets or exceeds all specifications, criteria and/or applicable design features and is herby assigned a pitot tube calibration factor C_P of 0.84.

Certified By: S. Waters Date: 01/28/21

Initial Impinger Outlet Thermocouple Calibration

ID Number	Ice Bath			Ambient			Hot Water Bath			Technician	Date Performed
	Reference Temperature (^{o}Rk)	Thermocouple Temperature (^{o}Rk)	Deviation*	Reference Temperature (^{o}Rk)	Thermocouple Temperature (^{o}Rk)	Deviation*	Reference Temperature (^{o}Rk)	Thermocouple Temperature (^{o}Rk)	Deviation*		
IO-1	494.17	493.87	-0.1%	524.37	523.17	-0.2%	672.17	672.67	0.1%	SM	03/16/21
IO-2	493.67	493.87	0.0%	524.57	523.17	-0.3%	671.77	672.67	0.1%	SM	03/16/21
IO-3	493.57	493.87	0.1%	521.37	523.17	0.3%	671.77	672.67	0.1%	SM	03/16/21
IO-4	493.97	493.87	0.0%	524.37	523.17	-0.2%	671.17	672.67	0.2%	SM	03/16/21
IO-5	493.77	493.87	0.0%	524.07	523.17	-0.2%	672.37	672.67	0.0%	SM	03/16/21
IO-6	493.97	493.87	0.0%	522.97	523.17	0.0%	670.77	672.67	0.3%	SM	03/16/21
IO-7	493.17	493.87	0.1%	524.37	523.17	-0.2%	671.37	672.67	0.2%	SM	03/16/21
IO-8	494.37	493.87	-0.1%	523.67	523.17	-0.1%	670.37	672.67	0.3%	SM	03/16/21
IO-9											
IO-10	493.77	493.87	0.0%	524.27	523.17	-0.2%	671.27	672.67	0.2%	SM	03/16/21
IO-11	494.37	493.87	-0.1%	524.37	523.17	-0.2%	672.27	672.67	0.1%	SM	03/16/21
IO-12	493.77	493.87	0.0%	522.17	523.17	0.2%	671.47	672.67	0.2%	SM	03/16/21
IO-13										SM	03/16/21
IO-14	493.87	493.87	0.0%	524.37	523.17	-0.2%	670.87	672.67	0.3%	SM	03/16/21
IO-15	494.17	493.87	-0.1%	524.37	523.17	-0.2%	671.47	672.67	0.2%	SM	03/16/21
IO-16	494.37	493.87	-0.1%	524.37	523.17	-0.2%	671.07	672.67	0.2%	SM	03/16/21
IO-17	493.37	493.87	0.1%	522.17			670.97				
IO-18	494.17	493.87	-0.1%	524.37	523.17	-0.2%	671.27	672.67	0.2%	SM	03/16/21
IO-19	493.97	493.87	0.0%	524.77	523.17	-0.3%	672.97	672.67	0.0%	SM	03/16/21

Reference Thermocouple: Fluke S/N: 83450033 or S/N 90460057 traceable to the Untied States National Institute of Standards and Technology
*Acceptable Deviation: 1.5%

Initial Oven Box Thermocouple Calibration

ID Number	Ice Bath			Ambient			Hot Water Bath			Technician	Date Performed
	Reference Temperature (°R)	Thermocouple Temperature (°R)	Deviation*	Reference Temperature (°R)	Thermocouple Temperature (°R)	Deviation*	Reference Temperature (°R)	Thermocouple Temperature (°R)	Deviation*		
OB-1	491.67	492.67	0.2%	524.67	523.67	-0.2%	671.67	673.67	0.3%	SMilo	02/22/21
OB-2	491.67	492	0.1%	530.67	531	0.1%	671.67	672	0.0%	SRW	03/02/21
OB-3	491.67	493	0.3%	530.67	530	-0.1%	671.67	671	-0.1%	SRW	03/02/21
OB-4	491.67	493.67	0.4%	524.67	524.67	0.0%	671.67	670.67	-0.1%	SMilo	02/22/21
OB-A	491.67	493	0.3%	530.67	529	-0.3%	671.67	673	0.2%	SRW	03/02/21
OB-B	491.67	492	0.1%	530.67	530	-0.1%	671.67	672	0.0%	SRW	03/02/21
OB-5	491.67	492	0.1%	530.67	530	-0.1%	671.67	670	-0.2%	SRW	03/02/21
OB-C	491.67	492	0.1%	530.67	529	-0.3%	671.67	674	0.3%	SRW	03/03/21
OB-6	491.67	493.67	0.4%	524.67	525	0.1%	671.67	669.67	-0.3%	SMilo	02/22/21
OB-7	491.67	494.67	0.6%	524.67	525	0.1%	671.67	669.67	-0.3%	SMilo	02/22/21
OB-E	491.67	492	0.1%	530.67	529	-0.3%	671.67	671.67	0.0%	SRW	03/03/21
OB-10	491.67	492	0.1%	530.67	531	0.1%	671.67	670	-0.2%	SRW	03/03/21
OB-11	491.67	495	0.7%	530.67	532	0.3%	671.67	672	0.0%	SRW	03/03/21
OB-12	491.67	493	0.3%	530.67	531	0.1%	671.67	671	-0.1%	SRW	03/03/21

Reference Thermocouple: Fluke S/N: 83450033 or S/N 90460057 traceable to the Untied States National Institute of Standards and Technology
*Acceptable Deviation: 1.5%

Post Test Equipment Calibration Data

POST TEST DRY GAS METER CALIBRATION

DATE:	05/26/21	METER BOX #:	7	BAROMETRIC PRESSURE (in Hg):	INITIAL 29.75	FINAL 29.75	AVG (P_{bar}) 29.75
TECHNICIAN:	S. Milo	CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	$DH_@$
	1																		
	2																		
	3																		
																AVG =			
18	1	0.4961	21.5	799.882	806.377	6.495	70	69	69	68	69	68.75	10.00	1.4	6.4725	6.4128	0.991	0.17	1.91
	2	0.4961	21.5	806.377	812.879	6.502	71	69	70	69	69	69.25	10.00	1.4	6.4733	6.4067	0.990	0.07	1.91
	3	0.4961	21.5	812.879	820.033	7.154	75	70	71	69	69	69.75	11.00	1.4	7.1157	7.0210	0.987	-0.24	1.92
																AVG =	0.989		
	1																		
	2																		
	3																		
																AVG =			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.989

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 0.994

PERCENT DIFFERENCE = -0.5

Post-Test Sample Probe Calibration Form

Probe ID P4-1

Visual Inspection

Do pitot tips appear to be damaged?	NO
Do thermocouple wires appear broken or shorted?	NO
Do all components appear to be in good condition?	YES

Post-Test Thermocouple Calibration

Reference Temperature ^{O}F	Thermocouple Temperature ^{O}I	Difference ^{O}F
65.7	67	1.3

Reference Thermocouple: Fluke S/N: 83450033 traceable to the Untied States National Institute of Standards and Technology

Accepatable Deviation +/- 2 ^{O}F

X Acceptable

_____ Unacceptable

Date 05/26/21 Technician S. Milo

D:\Equipment Calibration Data\2021\4"\Probe Post Cal P4C 01152021.xlsx\Initial

Post-Test Sample Probe Calibration Form

Probe ID P4-3

Visual Inspection

Do pitot tips appear to be damaged?	NO
Do thermocouple wires appear broken or shorted?	NO
Do all components appear to be in good condition?	YES

Post-Test Thermocouple Calibration

Reference Temperature ^{O}F	Thermocouple Temperature ^{O}F	Difference ^{O}F
65.7	66.9	1.2

Reference Thermocouple: Fluke S/N: 83450033 traceable to the Untied States National Institute of Standards and Technology

Accepatable Deviation +/- 2 ^{O}F

X Acceptable

_____ Unacceptable

Date 05/26/21 Technician S. Milo

POST TEST DRY GAS METER CALIBRATION

DATE:	05/25/21	METER BOX #:	11	BAROMETRIC PRESSURE (in Hg):	INITIAL 29.95	FINAL 29.95	AVG (P_{bar}) 29.95
TECHNICIAN:	S. Milo	CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	$DH_@$
	1																		
	2																		
	3																		
																AVG =			
18	1	0.4961	22	564.351	570.939	6.588	78	75	78	74	75	75.5	10.00	1.2	6.5226	6.4077	0.982	-0.35	1.63
	2	0.4961	22	570.939	578.168	7.229	80	78	80	76	78	78	11.00	1.2	7.1239	7.0354	0.988	0.18	1.63
	3	0.4961	22	578.169	584.757	6.588	81	80	82	78	79	79.75	10.00	1.2	6.4712	6.3899	0.987	0.17	1.62
																AVG =	0.986		
	1																		
	2																		
	3																		
																AVG =			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.986

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 0.992

PERCENT DIFFERENCE = -0.6

Appendix E

PPA Operations Data

Date	5/6/2021																											
Time		900				1000				1100				1200				1300				1400				1500		
Stack Testing		RUN1: 9:13-11:06									RUN 2 11:42-13:32										RUN 3: 14:00-15:45							
A/F column Feed Rate (pounds per hour)		250									250										250	0	0	200	250	250	250	
903 Distillation (pounds per hour)		205									205									205								
DAF ISO Venting																												
Charging water to Hyd - venting														x														
Charging Sulfuric acid - venting															x													
Hydrolysis - Wash Tank pressure Transfer to Hydrolysis					x																				x	x	x	
Hydrolysis - Phase Settle (del as no venting 7-9-21)																												
Vap heels pressure transfer												x																
Vap cycle		x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x			x	x	x					
Rec Tk to 903 Fd Tk Press Xfer (added to process 4/2020)																									x	x	x	
Venting after press tran from North/South Acid tank to Hyd					x																							
DAF tran to Hyd - venting during transfer																												
Hydrolysis - transfer to Waste Acid Trailer			x																									
Wash Tk to Vaporizer pressure transfer (new 8-2019)																												
Scrubber Recirculation Flow (gpm)		38									38									-0.5								
Scrubber dp (inwc)		-0.5									-0.5									38								

Last Page of Report