Source Test Report

The Chemours Company
22828 Highway 87W
Fayetteville, NC 28306

Source Tested: VEN Carbon Bed Adsorber
Test Date: May 17, 2021

AST Project No. 2021-1324O

Prepared By
Alliance Source Testing, LLC
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Regulatory Information

Permit No. Title V Air Permit No. 03735T48

Source Information

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

Contact Information

Test Location
The Chemours Company.
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Fayetteville, NC 28306

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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
Alliance Source Testing, LLC

Date

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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, LLC (Chemours) 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 VEN carbon bed adsorber.

1.1 Source and Control System Descriptions

VEN is part of the fluoromonomer area at the Fayetteville facility. This area produces fluorocarbon compounds used to produce Chemours products, such as Nafion® Krytox® and Viton®. Indoor air fugitive emissions from VEN are vented to a carbon bed which is then vented to atmosphere through the Division Stack. Process emissions from VEN are directed to a thermal oxidizer.

1.2 Project Team

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

Table 1-1
Project Team

Facility Personnel	Christel Compton
DAQ Personnel	Gary Saunders
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 17, 2021. Testing consisted of determining the emission rate of hexafluoro-propylene oxide-dimer acid (HFPO-DA) from the VEN carbon bed adsorber.

During the testing in VEN on May 17, the ABR feed line plugged during an ABR run. Because of the stack testing the team made the decision to wait until the testing was complete to address the plug. There was an Acid Fluoride (AF) alarm in the ABR room when the spent carbonate removed from the ABR, assumed to be related to the burnout process so testing was continued. While waiting for the testing to be completed, the AF in the vaporizer expanded and the Relief Device alarm sounded. It was thought this would not cause a leak so testing continued until complete. After the testing was completed, the technicians entered the ABR room and found that there had been an AF leak on the RV for the vaporizer.

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	**5/7/21**	**5/7/21**	**5/7/21**	**--**
HFPO-DA Data				
Outlet Emission Rate, lb/hr	1.1E-03	1.4E-03	3.7E-03	2.1E-03
Inlet Emission Rate, lb/hr	4.0E-02	7.0E-02	1.5E-01	8.6E-02
Reduction Efficiency, %	97.2	98.0	97.5	97.6

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: VEN 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	30.23	= barometric pressure, in. Hg
ΔH	2.628	= pressure differential of orifice, in H_2O
Pm	30.42	= in. Hg

Absolute Stack Gas Pressure (Ps), in. Hg

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

where,

Pb	30.23	= barometric pressure, in. Hg
Pg	2.10	= static pressure, in. H_2O
Ps	30.38	= in. Hg

Standard Meter Volume (Vmstd), dscf

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

where,

Y	1.002	= meter correction factor
Vm	89.229	= meter volume, cf
Pm	30.42	= absolute meter pressure, in. Hg
Tm	539.0	= absolute meter temperature, ^oR
Vmstd	89.000	= dscf

Standard Wet Volume (Vwstd), scf

$$Vwstd = 0.04716 \times Vlc$$

where,

Vlc	22.5	= volume of H_2O collected, ml
Vwstd	1.061	= scf

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

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

where,

Ts	80.3	= stack temperature, °F
Ps	30.38	= absolute stack gas pressure, in. Hg
BWSsat	0.034	= dimensionless

Moisture Fraction (BWS), dimensionless (measured)

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

where,

Vwstd	1.061	= standard wet volume, scf
Vmstd	89.000	= standard meter volume, dscf
BWS	0.012	= dimensionless

Alliance SOURCE TESTING

Location: Ramboll - Chemours Fayetteville Works Facility, NC
Source: VEN 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	0.034	= moisture fraction (theoretical at saturated conditions)
BWSmsd	0.012	= moisture fraction (measured)
BWS	0.012	

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	0.0	= carbon dioxide concentration, %
O_2	20.9	= oxygen concentration, %
Md	28.84	= lb/lb mol

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

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

where,

Md	28.84	= molecular weight (DRY), lb/lb mol
BWS	0.012	= moisture fraction, dimensionless
Ms	28.71	= 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
$\Delta P^{1/2}$	0.758	= velocity head of stack gas, $(\text{in. } H_2O)^{1/2}$
Ts	539.9	= absolute stack temperature, °R
Ps	30.38	= absolute stack gas pressure, in. Hg
Ms	28.71	= molecular weight of stack gas, lb/lb mol
Vs	42.8	= ft/sec

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

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

where,

Vs	42.8	= stack gas velocity, ft/sec
As	7.07	= cross-sectional area of stack, ft^2
Qa	18,173	= acfm

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

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

where,

Qa	18,173	= average stack gas flow at stack conditions, acfm
BWS	0.012	= moisture fraction, dimensionless
Ps	30.38	= absolute stack gas pressure, in. Hg
Ts	539.9	= absolute stack temperature, °R
Qs	17,823	= dscfm

Location: Ramboll - Chemours Fayetteville Works Facility, NC
Source: VEN 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	1.002	= meter correction factor, dimensionless
Θ	96	= run time, min.
Vm	89.229	= total meter volume, dcf
Tm	539.0	= absolute meter temperature, °R
ΔH@	1.6	= orifice meter calibration coefficient, in. H_2O
Pb	30.23	= barometric pressure, in. Hg
ΔH avg	2.628	= average pressure differential of orifice, in H_2O
Md	28.84	= molecular weight (DRY), lb/lb mol
$(\Delta H)^{1/2}$	1.595	= average squareroot pressure differential of orifice, $(in. H2O)^{1/2}$
Yqa	-2.1	= 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	539.9	= absolute stack temperature, °R
Ps	30.38	= absolute stack gas pressure, in. Hg
Vlc	22.5	= volume of H_2O collected, ml
Vm	89.229	= meter volume, cf
Pm	30.42	= absolute meter pressure, in. Hg
Y	1.002	= meter correction factor, unitless
Tm	539.0	= absolute meter temperature, °R
Vn	90.741	= 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	90.741	= nozzle volume, ft3
θ	96.0	= run time, minutes
An	0.00037	= area of nozzle, ft^2
Vs	42.8	= average velocity, ft/sec
I	98.2	= %

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

$$C_{HPFODA} = \frac{M_n \times 35.31}{Vmstd}$$

where,

Mn	41,622.0	= HFPO-DA mass, ng
Vmstd	89.000	= standard meter volume, dscf
$C_{(HFPODA)}$	1.7E+04	= ng/dscm

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

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

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

where,

$C_{(HFPODA)}$	1.7E+04	= HFPO-DA concentration, ng/dscm
Qs	17,823	= average stack gas flow at standard conditions, dscfm
$ER_{(HFPODA)}$	1.1E-03	= lb/hr

Appendix B

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

Run Number		Run 1	Run 2	Run 3	Average
Date		5/7/21	5/7/21	5/7/21	--
Start Time		9:55	12:30	14:54	--
Stop Time		11:57	14:24	16:54	--
Run Time, min	(θ)	96.0	96.0	96.0	96.0
INPUT DATA					
Barometric Pressure, in. Hg	(Pb)	30.23	30.23	30.23	30.23
Meter Correction Factor	(Y)	1.002	1.002	1.002	1.002
Orifice Calibration Value	(ΔH @)	1.600	1.600	1.600	1.600
Meter Volume, ft^3	(Vm)	89.229	90.727	92.216	90.724
Meter Temperature, °F	(Tm)	79.3	90.8	91.3	87.2
Meter Temperature, °R	(Tm)	539.0	550.5	551.0	546.8
Meter Orifice Pressure, in. WC	(ΔH)	2.628	2.603	2.677	2.636
Volume H_2O Collected, mL	(Vlc)	22.5	24.4	25.6	24.2
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	$M_{(HFPODA)}$	29,000.0	28,500.0	41,200.0	32,900.0
BH HFPO-DA Mass, ng	$M_{(HFPODA)}$	12,600.0	24,300.0	101,000.0	45,966.7
Imp HFPO-DA Mass, ng	$M_{(HFPODA)}$	15.6	36.6	77.2	43.1
Breakthrough HFPO-DA Mass, ng	$M_{(HFPODA)}$	6.4	5.6	5.3	5.8
Total HFPO-DA Mass, ng	$M_{(HFPODA)}$	41,622.0	52,842.2	142,282.5	78,915.6
ISOKINETIC DATA					
Standard Meter Volume, ft^3	(Vmstd)	89.000	88.598	89.993	89.197
Standard Water Volume, ft^3	(Vwstd)	1.061	1.151	1.207	1.140
Moisture Fraction Measured	(BWSmsd)	0.012	0.013	0.013	0.013
Moisture Fraction @ Saturation	(BWSsat)	0.034	0.037	0.043	0.038
Moisture Fraction	(BWS)	0.012	0.013	0.013	0.013
Meter Pressure, in Hg	(Pm)	30.42	30.42	30.43	30.42
Volume at Nozzle, ft^3	(Vn)	90.741	90.873	93.095	91.57
Isokinetic Sampling Rate, (%)	(I)	98.2	99.0	99.4	98.9
DGM Calibration Check Value, (+/- 5%)	(Y_{qa})	-2.1	-1.6	-1.2	-1.6
EMISSION CALCULATIONS					
HFPO-DA Concentration, ng/dscm	$C_{(HFPODA)}$	1.7E+04	2.1E+04	5.6E+04	3.1E+04
HFPO-DA Emission Rate, lb/hr	$ER_{(HFPODA)}$	1.1E-03	1.4E-03	3.7E-03	2.1E-03
REDUCTION CALCULATIONS					
Inlet HFPO-DA Emission Rate, lb/hr	$ER_{(HFPODA)}$	4.0E-02	7.0E-02	1.5E-01	8.6E-02
HFPO-DA Reduction Efficiency, %	$ER_{(HFPODA)}$	97.2	98.0	97.5	97.6

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

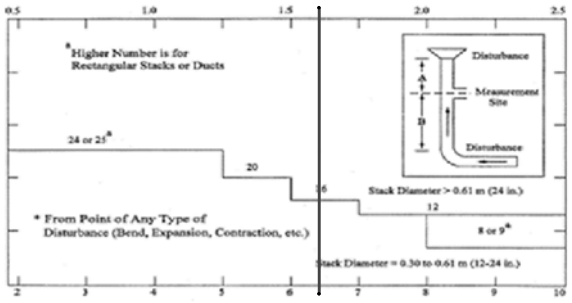
Run Number		Run 1	Run 2	Run 3	Average
Date		5/7/21	5/7/21	5/7/21	--
Start Time		9:55	12:30	14:54	--
Stop Time		11:57	14:24	16:54	--
Run Time, min		96.0	96.0	96.0	96.0
VELOCITY HEAD, in. WC					
Point 1		0.27	0.35	0.30	0.31
Point 2		0.28	0.34	0.32	0.31
Point 3		0.28	0.35	0.35	0.33
Point 4		0.35	0.38	0.42	0.38
Point 5		0.40	0.44	0.42	0.42
Point 6		0.45	0.52	0.53	0.50
Point 7		0.55	0.55	0.55	0.55
Point 8		0.61	0.60	0.65	0.62
Point 9		0.65	0.62	0.67	0.65
Point 10		0.66	0.62	0.68	0.65
Point 11		0.68	0.64	0.68	0.67
Point 12		0.68	0.64	0.68	0.67
Point 13		0.92	0.65	0.75	0.77
Point 14		0.92	0.65	0.80	0.79
Point 15		0.85	0.90	0.90	0.88
Point 16		0.92	0.90	0.92	0.91
Point 17		0.92	0.87	0.90	0.90
Point 18		0.85	0.84	0.85	0.85
Point 19		0.62	0.61	0.62	0.62
Point 20		0.50	0.52	0.51	0.51
Point 21		0.51	0.48	0.47	0.49
Point 22		0.47	0.46	0.47	0.47
Point 23		0.46	0.47	0.45	0.46
Point 24		0.47	0.44	0.45	0.45
CALCULATED DATA					
Square Root of ΔP, (in. WC)$^{1/2}$	(ΔP)	0.758	0.752	0.763	0.758
Pitot Tube Coefficient	(Cp)	0.840	0.840	0.840	0.840
Barometric Pressure, in. Hg	(Pb)	30.23	30.23	30.23	30.23
Static Pressure, in. WC	(Pg)	2.10	2.10	2.10	2.10
Stack Pressure, in. Hg	(Ps)	30.38	30.38	30.38	30.38
Stack Cross-sectional Area, ft^2	(As)	7.07	7.07	7.07	7.07
Temperature, °F	(Ts)	80.3	82.9	87.3	83.5
Temperature, °R	(Ts)	539.9	542.6	547.0	543.170
Moisture Fraction Measured	(BWSmsd)	0.012	0.013	0.013	0.013
Moisture Fraction @ Saturation	(BWSsat)	0.034	0.037	0.043	0.038
Moisture Fraction	(BWS)	0.012	0.013	0.013	0.013
O_2 Concentration, %	(O_2)	20.9	20.9	20.9	20.9
CO_2 Concentration, %	(CO_2)	0.0	0.0	0.0	0.0
Molecular Weight, lb/lb-mole (dry)	(Md)	28.84	28.84	28.84	28.84
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.71	28.70	28.69	28.70
Velocity, ft/sec	(Vs)	42.8	42.6	43.4	43.0
VOLUMETRIC FLOW RATE					
At Stack Conditions, acfm	(Qa)	18,173	18,058	18,416	18,216
At Standard Conditions, dscfm	(Qs)	17,823	17,606	17,802	17,744

Method 1 Data

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source VEN Carbon Bed Outlet
Project No. 2021-1324O
Date: 05/07/21

Stack Parameters

Duct Orientation:	Horizontal	
Duct Design:	Circular	
Distance from Far Wall to Outside of Port:	51.13	in
Nipple Length:	15.13	in
Depth of Duct:	36.00	in
Cross Sectional Area of Duct:	7.07	ft^2
No. of Test Ports:	2	
Distance A:	4.8	ft
Distance A Duct Diameters:	1.6	(must be > 0.5)
Distance B:	4.8	ft
Distance B Duct Diameters:	1.6	(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

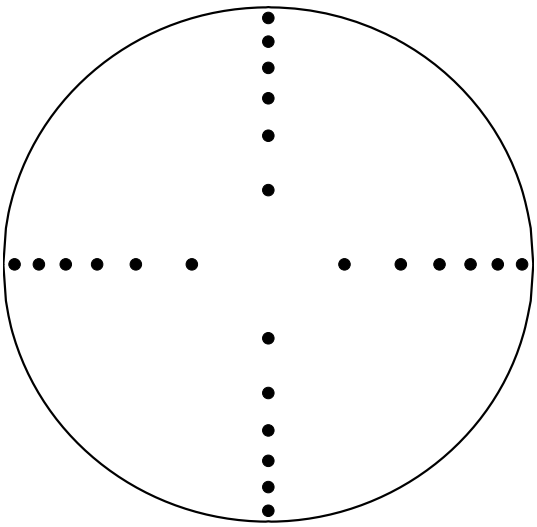
	2	3	4	5	6	7	8	9	10	11	12
1	14.6	--	6.7	--	4.4	--	3.2	--	2.6	--	2.1
2	85.4	--	25.0	--	14.6	--	10.5	--	8.2	--	6.7
3	--	--	75.0	--	29.6	--	19.4	--	14.6	--	11.8
4	--	--	93.3	--	70.4	--	32.3	--	22.6	--	17.7
5	--	--	--	--	85.4	--	67.7	--	34.2	--	25.0
6	--	--	--	--	95.6	--	80.6	--	65.8	--	35.6
7	--	--	--	--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

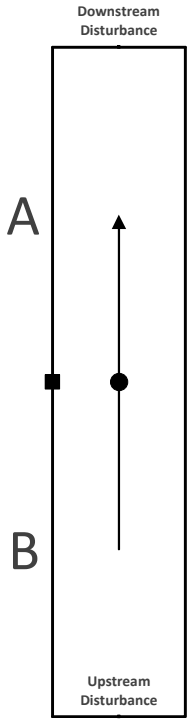
**Percent of stack diameter from inside wall to traverse point.*

Traverse Point	% of Diameter	Distance from inside wall	Distance from outside of port
1	2.1	1.00	16.13
2	6.7	2.41	17.54
3	11.8	4.25	19.37
4	17.7	6.37	21.50
5	25.0	9.00	24.13
6	35.6	12.82	27.94
7	64.4	23.18	38.31
8	75.0	27.00	42.13
9	82.3	29.63	44.75
10	88.2	31.75	46.88
11	93.3	33.59	48.71
12	97.9	35.00	50.13

Stack Diagram
A = 4.8 ft.
B = 4.8 ft.
Depth of Duct = 36 in.

Cross Sectional Area





Cyclonic Flow Check

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source VEN Carbon Bed Outlet
Project No. 2021-1324O
Date 05/07/21

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

Method 4 Data

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

Run 1	Date:	5/7/21						
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	845.3	1145.3
Final Mass, g	0.0	2.0	100.0	100.0	102.0	0.0	863.8	1167.8
Gain	0.0	2.0	0.0	0.0	2.0	0.0	18.5	22.5
Run 2	**Date:**	5/7/21						
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	836.4	1136.4
Final Mass, g	0.0	0.0	100.0	102.0	102.0	2.0	854.8	1160.8
Gain	0.0	0.0	0.0	2.0	2.0	2.0	18.4	24.4
Run 3	**Date:**	5/7/21						
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	840.6	1140.6
Final Mass, g	0.0	2.0	102.0	102.0	100.0	0.0	860.2	1166.2
Gain	0.0	2.0	2.0	2.0	0.0	0.0	19.6	25.6

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	9:55	**Source:**	VEN Carbon Bed Outlet	
Date:	5/7/21	Run 1 VALID	**End Time:**	11:57	**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:	3		Est. Tm:	75	°F	OTM-45	Pb:	30.23 in. Hg	Vlc (ml)
Barometric:	29.88	in. Hg	Y:	1.002		Est. Ts:	76	°F		Pg:	2.10 in. WC	22.5
Static Press:	2.10	in. WC	ΔH @ (in.WC):	1.600		Est. ΔP:	0.44	in. WC		O_2:	20.9 %	K-FACTOR
Stack Press:	30.03	in. Hg	Probe ID:	P4=1		Est. Dn:	0.249	in.		CO_2:	0.0 %	4.428
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):	0.001	0.001	0.001	--	0.002	Mid 1 (cf) 4.827 4.830 0.003
Md:	28.84	lb/lb-mole	Nozzle ID:	G-1	glass	Vacuum (in Hg):	8	8	8	--	10	Mid 2 (cf) 5.030 5.433 0.403
Ms:	28.73	lb/lb-mole	Nozzle Dn (in.):	0.262		Pitot Tube:	Pass	--	--	--	Pass	Mid 3 (cf) --
												Mid-Point Leak Check Vol (cf): 0.406

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)
A-1	0.00	4.00	295.333	0.27	67	65	1.20	1.21	3	85	80	53	45	104.2	29.10
2	4.00	8.00	298.040	0.28	70	76	1.23	1.23	3	84	80	50	43	102.1	29.94
3	8.00	12.00	300.730	0.28	71	78	1.23	1.23	3	85	80	49	43	102.1	30.00
4	12.00	16.00	303.420	0.35	72	79	1.53	1.53	3	85	80	47	43	100.8	33.57
5	16.00	20.00	306.390	0.40	73	79	1.75	1.76	4	84	85	47	42	98.0	35.89
6	20.00	24.00	309.480	0.45	74	80	1.97	1.98	4	84	85	46	43	96.3	38.10
7	24.00	28.00	312.700	0.55	75	80	2.41	2.41	5	85	85	46	44	97.3	42.12
8	28.00	32.00	316.300	0.61	76	80	2.68	2.70	6	85	85	46	44	96.9	44.36
9	32.00	36.00	320.080	0.65	76	80	2.85	2.87	6	85	85	46	44	96.4	45.79
10	36.00	40.00	323.960	0.66	78	81	2.90	2.89	6	85	85	47	45	96.1	46.18
11	40.00	44.00	327.870	0.68	77	81	2.98	2.98	6	85	85	47	46	95.8	46.88
12	44.00	48.00	331.820	0.68	78	81	2.99	3.00	6	85	85	47	46	98.6	46.88
B-1	48.00	52.00	335.890	0.92	76	82	4.01	4.00	8	85	85	47	47	90.6	54.58
2	52.00	56.00	340.210	0.92	80	83	4.04	4.00	8	85	88	44	48	109.4	54.63
3	56.00	60.00	345.460	0.85	82	83	3.74	3.78	8	85	85	44	50	97.3	52.51
4	60.00	64.00	349.970	0.92	83	84	4.05	4.05	9	85	85	47	50	95.6	54.68
5	64.00	68.00	354.580	0.92	85	83	4.07	4.05	9	85	85	47	50	95.4	54.63
6	68.00	72.00	359.200	0.85	87	82	3.79	3.80	8	85	85	48	51	96.4	52.46
7	72.00	76.00	363.710	0.62	87	82	2.77	2.80	6	85	86	49	51	97.3	44.80
8	76.00	80.00	367.610	0.50	87	82	2.24	2.25	5	85	85	49	50	98.3	40.23
9	80.00	84.00	371.150	0.51	87	82	2.28	2.30	5	85	86	49	49	97.3	40.63
10	84.00	88.00	374.690	0.47	87	81	2.11	2.10	5	85	86	49	50	98.9	38.97
11	88.00	92.00	378.150	0.46	88	81	2.07	2.05	5	85	86	50	51	98.1	38.55
12	92.00	96.00	381.550	0.47	88	81	2.11	2.10	5	85	86	51	51	97.5	38.97
	Final DGM:		384.968												

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	89.229 ft^3	0.59 in. WC	79.3 °F	80.3 °F	9	2.628 in. WC	98.2	0.012	-2.1

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC			**Start Time:**	12:30	**Source:**	VEN Carbon Bed Outlet
Date:	5/7/21	**Run 2**	**VALID**	**End Time:**	14:24	**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:**	3		**Est. Tm:**	79	°F	OTM-45	**Pb:**	30.23 in. Hg	**Vlc (ml)**
Barometric:	29.88	in. Hg	**Y:**	1.002		**Est. Ts:**	80	°F		**Pg:**	2.10 in. WC	24.4
Static Press:	2.10	in. WC	**ΔH @ (in.WC):**	1.600		**Est. ΔP:**	0.59	in. WC		**O_2:**	20.9 %	**K-FACTOR**
Stack Press:	30.03	in. Hg	**Probe ID:**	P4=1		**Est. Dn:**	0.230	in.		**CO_2:**	0.0 %	4.43
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):	0.002	0.002	0.002	--	0.003	**Mid 1 (cf)**	7.724	7.739	0.015
Md:	28.84	lb/lb-mole	**Nozzle ID:**	G-1	glass	Vacuum (in Hg):	9	9	9	--	11	**Mid 2 (cf)**	7.739	7.858	0.119
Ms:	28.73	lb/lb-mole	**Nozzle Dn (in.):**	0.262		Pitot Tube:	Pass	--	--	--	Pass	**Mid 3 (cf)**			--
												Mid-Point Leak Check Vol (cf):			0.134

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)
A-1	0.00	4.00	385.241	0.35	88	81	1.57	1.55	5	85	85	52	52	99.0	33.63
2	4.00	8.00	388.240	0.34	88	81	1.53	1.53	5	85	85	52	52	101.2	33.15
3	8.00	12.00	391.260	0.35	89	82	1.57	1.60	5	85	90	52	51	100.3	33.66
4	12.00	16.00	394.300	0.38	90	82	1.71	1.70	5	85	90	51	52	98.7	35.07
5	16.00	20.00	397.420	0.44	90	82	1.98	2.00	6	85	90	51	50	97.3	37.74
6	20.00	24.00	400.730	0.52	90	82	2.34	2.35	7	85	90	52	51	97.2	41.03
7	24.00	28.00	404.320	0.55	91	82	2.48	2.50	8	85	90	52	52	98.1	42.20
8	28.00	32.00	408.050	0.60	91	82	2.70	2.70	8	85	91	53	54	95.4	44.07
9	32.00	36.00	411.840	0.62	91	82	2.79	2.80	8	85	92	54	54	97.1	44.80
10	36.00	40.00	415.760	0.62	91	83	2.78	2.80	8	85	92	54	54	98.2	44.84
11	40.00	44.00	419.720	0.64	91	83	2.87	2.90	8	85	92	55	54	97.7	45.56
12	44.00	48.00	423.720	0.64	91	83	2.87	2.90	8	86	92	55	55	101.0	45.56
B-1	48.00	52.00	427.858	0.65	89	77	2.94	2.95	8	92	89	60	55	96.1	45.66
2	52.00	56.00	431.830	0.65	91	84	2.91	2.95	8	87	88	59	54	99.9	45.96
3	56.00	60.00	435.950	0.90	91	83	4.03	4.05	10	87	89	59	54	93.9	54.03
4	60.00	64.00	440.500	0.90	92	84	4.03	4.04	10	88	90	60	52	97.0	54.08
5	64.00	68.00	445.200	0.87	92	84	3.89	3.90	10	88	91	60	52	97.7	53.17
6	68.00	72.00	449.860	0.84	92	84	3.76	3.80	10	88	91	56	53	97.9	52.24
7	72.00	76.00	454.450	0.61	92	84	2.74	2.75	8	90	90	54	50	99.7	44.52
8	76.00	80.00	458.440	0.52	92	85	2.33	2.35	8	90	92	54	48	99.0	41.14
9	80.00	84.00	462.100	0.48	92	85	2.15	2.15	8	89	91	52	46	102.2	39.53
10	84.00	88.00	465.730	0.46	92	85	2.06	2.10	7	88	91	51	45	99.5	38.70
11	88.00	92.00	469.190	0.47	92	85	2.11	2.10	7	88	91	52	46	99.2	39.12
12	92.00	96.00	472.680	0.44	92	85	1.98	2.00	7	88	90	53	47	100.5	37.85
	Final DGM:		476.102												

RESULTS	Run Time		Vm		ΔP		Tm		Ts		Max Vac	ΔH		%ISO	BWS	Y_{qa}
	96.0	min	90.727	ft^3	0.58	in. WC	90.8	°F	82.9	°F	10	2.603	in. WC	99.0	0.013	-1.6

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	14:54	**Source:**	VEN Carbon Bed Outlet	
Date:	5/7/21	Run 3 VALID	**End Time:**	16:54	**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:	3		Est. Tm:	91	°F	OTM-45	Pb:	30.23	in. Hg	Vlc (ml)
Barometric:	29.88	in. Hg	Y:	1.002		Est. Ts:	83	°F		Pg:	2.10	in. WC	25.6
Static Press:	2.10	in. WC	ΔH @ (in.WC):	1.600		Est. ΔP:	0.58	in. WC		O_2:	20.9	%	K-FACTOR
Stack Press:	30.03	in. Hg	Probe ID:	P4=1		Est. Dn:	0.230	in.		CO_2:	0.0	%	4.501
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):	0.002	0.002	0.002 / --	0.002	Mid 1 (cf)	9.573	9.621 / 0.048
Md:	28.84	lb/lb-mole	Nozzle ID:	G-1	glass	Vacuum (in Hg):	10	10	10 / --	12	Mid 2 (cf)	9.621	9.763 / 0.142
Ms:	28.73	lb/lb-mole	Nozzle Dn (in.):	0.262		Pitot Tube:	Pass	--	-- / --	Pass	Mid 3 (cf)		--
											Mid-Point Leak Check Vol (cf):		0.190

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft^3)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (fps)
					DGM Average	Stack				Probe	Filter	Imp Exit	Aux		
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.		
	Begin	End			--	--	Ideal	Actual		--	--	--	--		
A-1	0.00	4.00	476.377	0.30	89	85	1.34	1.30	4	91	95	64	51	97.6	31.25
2	4.00	8.00	479.110	0.32	90	85	1.43	1.40	4	91	95	56	45	101.5	32.28
3	8.00	12.00	482.050	0.35	91	85	1.57	1.60	4	90	95	53	47	100.9	33.75
4	12.00	16.00	485.110	0.42	91	85	1.88	1.90	5	90	93	52	47	98.8	36.98
5	16.00	20.00	488.390	0.42	91	85	1.88	1.90	5	91	93	51	49	100.6	36.98
6	20.00	24.00	491.730	0.53	91	86	2.37	2.40	6	90	92	50	50	96.7	41.58
7	24.00	28.00	495.330	0.55	91	86	2.46	2.50	6	91	92	50	50	97.6	42.35
8	28.00	32.00	499.030	0.65	92	86	2.91	2.95	8	90	92	51	51	98.2	46.04
9	32.00	36.00	503.080	0.67	92	86	3.00	3.00	8	90	91	52	49	98.0	46.75
10	36.00	40.00	507.180	0.68	92	87	3.03	3.05	8	89	91	52	51	98.3	47.14
11	40.00	44.00	511.320	0.68	92	87	3.03	3.05	8	88	91	52	49	98.0	47.14
12	44.00	48.00	515.450	0.68	92	87	3.03	3.05	8	89	90	54	50	102.4	47.14
B-1	48.00	52.00	519.763	0.75	89	87	3.33	3.35	8	90	87	57	53	98.6	49.50
2	52.00	56.00	524.098	0.80	91	89	3.54	3.60	9	89	87	52	51	93.7	51.22
3	56.00	60.00	528.360	0.90	91	89	3.98	4.00	10	89	86	55	53	96.9	54.33
4	60.00	64.00	533.030	0.92	91	89	4.07	4.10	10	90	86	55	51	100.0	54.93
5	64.00	68.00	537.900	0.90	91	89	3.98	4.00	10	89	86	55	52	98.0	54.33
6	68.00	72.00	542.620	0.85	92	89	3.77	3.80	10	88	86	53	52	97.6	52.80
7	72.00	76.00	547.200	0.62	92	89	2.76	2.80	7	87	86	54	52	99.1	45.09
8	76.00	80.00	551.180	0.51	92	89	2.27	2.30	6	87	86	55	53	100.9	40.90
9	80.00	84.00	554.860	0.47	92	89	2.09	2.10	6	88	85	55	52	100.2	39.26
10	84.00	88.00	558.370	0.47	92	89	2.09	2.10	6	89	85	56	52	100.5	39.26
11	88.00	92.00	561.890	0.45	92	89	2.00	2.00	6	89	85	57	51	100.2	38.33
12	92.00	96.00	565.320	0.45	92	89	2.01	2.00	6	90	85	58	51	101.0	38.41
	Final DGM:		568.783												

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	92.216 ft^3	0.60 in. WC	91.3 °F	87.3 °F	10	2.677 in. WC	99.4	0.013	-1.2

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

Run Number		Run 1	Run 2	Run 3	Average
Date		5/7/21	5/7/21	5/7/21	--
Start Time		9:55	12:30	14:54	--
Stop Time		11:57	14:24	16:54	--
Run Time, min	(θ)	96.0	96.0	96.0	96.0
INPUT DATA					
Barometric Pressure, in. Hg	(Pb)	30.23	30.23	30.23	30.23
Meter Correction Factor	(Y)	0.991	0.991	0.991	0.991
Orifice Calibration Value	(ΔH @)	1.880	1.880	1.880	1.880
Meter Volume, ft^3	(Vm)	80.071	83.966	83.671	82.569
Meter Temperature, °F	(Tm)	73.9	84.1	91.6	83.2
Meter Temperature, °R	(Tm)	533.5	543.8	551.3	542.9
Meter Orifice Pressure, in. WC	(ΔH)	2.436	2.630	2.533	2.533
Volume H_2O Collected, mL	(Vlc)	26.2	26.2	24.6	25.7
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	$M_{(HFPODA)}$	282,000.0	274,000.0	284,000.0	280,000.0
BH HFPO-DA Mass, ng	$M_{(HFPODA)}$	1,160,000.0	2,320,000.0	5,040,000.0	2,840,000.0
Imp HFPO-DA Mass, ng	$M_{(HFPODA)}$	18,500.0	83.5	99,000.0	39,194.5
Breakthrough HFPO-DA Mass, ng	$M_{(HFPODA)}$	975.0	27.2	8,750.0	3,250.7
Total HFPO-DA Mass, ng	$M_{(HFPODA)}$	1,461,475.0	2,594,110.7	5,431,750.0	3,162,445.2
ISOKINETIC DATA					
Standard Meter Volume, ft^3	(Vmstd)	79.759	82.102	80.684	80.849
Standard Water Volume, ft^3	(Vwstd)	1.236	1.236	1.160	1.210
Moisture Fraction Measured	(BWSmsd)	0.015	0.015	0.014	0.015
Moisture Fraction @ Saturation	(BWSsat)	0.028	0.037	0.039	0.035
Moisture Fraction	(BWS)	0.015	0.015	0.014	0.015
Meter Pressure, in Hg	(Pm)	30.41	30.42	30.42	30.42
Volume at Nozzle, ft^3	(Vn)	82.558	86.300	84.990	84.62
Isokinetic Sampling Rate, (%)	(I)	98.4	98.8	99.2	98.8
DGM Calibration Check Value, (+/- 5%)	(Y_{qa})	-2.1	-2.7	-1.8	-2.2
EMISSION CALCULATIONS					
HFPO-DA Concentration, ng/dscm	$C_{(HFPODA)}$	6.47E+05	1.12E+06	2.38E+06	1.38E+06
HFPO-DA Emission Rate, lb/hr	$ER_{(HFPODA)}$	3.98E-02	7.04E-02	1.47E-01	8.57E-02

Volumetric Flow Rate Data

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

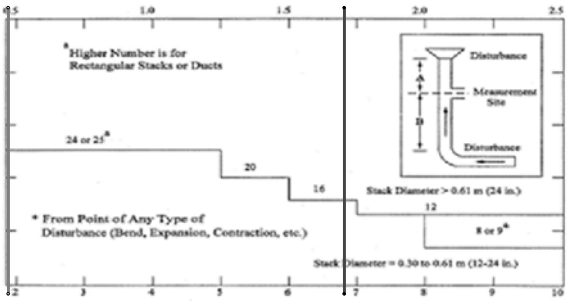
Run Number		Run 1	Run 2	Run 3	Average
Date		5/7/21	5/7/21	5/7/21	--
Start Time		9:55	12:30	14:54	--
Stop Time		11:57	14:24	16:54	--
Run Time, min		96.0	96.0	96.0	96.0
VELOCITY HEAD, in. WC					
Point 1		0.20	0.28	0.24	0.24
Point 2		0.21	0.40	0.44	0.35
Point 3		0.38	0.38	0.45	0.40
Point 4		0.38	0.52	0.50	0.47
Point 5		0.51	0.58	0.56	0.55
Point 6		0.54	0.58	0.55	0.56
Point 7		0.54	0.54	0.55	0.54
Point 8		0.60	0.54	0.54	0.56
Point 9		0.58	0.58	0.52	0.56
Point 10		0.52	0.55	0.52	0.53
Point 11		0.54	0.55	0.52	0.54
Point 12		0.54	0.52	0.50	0.52
Point 13		0.21	0.22	0.20	0.21
Point 14		0.48	0.50	0.50	0.49
Point 15		0.60	0.60	0.55	0.58
Point 16		0.70	0.65	0.65	0.67
Point 17		0.68	0.65	0.68	0.67
Point 18		0.68	0.67	0.66	0.67
Point 19		0.64	0.63	0.60	0.62
Point 20		0.55	0.60	0.60	0.58
Point 21		0.58	0.60	0.54	0.57
Point 22		0.52	0.59	0.52	0.54
Point 23		0.54	0.59	0.52	0.55
Point 24		0.50	0.59	0.50	0.53
CALCULATED DATA					
Square Root of ΔP, $(\text{in. WC})^{1/2}$	(ΔP)	0.705	0.729	0.714	0.716
Pitot Tube Coefficient	(Cp)	0.840	0.840	0.840	0.840
Barometric Pressure, in. Hg	(Pb)	30.23	30.23	30.23	30.23
Static Pressure, in. WC	(Pg)	-7.20	-7.80	-7.50	-7.50
Stack Pressure, in. Hg	(Ps)	29.70	29.66	29.68	29.68
Stack Cross-sectional Area, ft^2	(As)	7.07	7.07	7.07	7.07
Temperature, °F	(Ts)	74.3	82.0	83.9	80.0
Temperature, °R	(Ts)	533.9	541.6	543.5	539.698
Moisture Fraction Measured	(BWSmsd)	0.015	0.015	0.014	0.015
Moisture Fraction @ Saturation	(BWSsat)	0.028	0.037	0.039	0.035
Moisture Fraction	(BWS)	0.015	0.015	0.014	0.015
O_2 Concentration, %	(O_2)	20.9	20.9	20.9	20.9
CO_2 Concentration, %	(CO_2)	0.0	0.0	0.0	0.0
Molecular Weight, lb/lb-mole (dry)	(Md)	28.84	28.84	28.84	28.84
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.67	28.68	28.68	28.68
Velocity, ft/sec	(Vs)	40.1	41.8	41.0	40.9
VOLUMETRIC FLOW RATE					
At Stack Conditions, acfm	(Qa)	17,009	17,710	17,381	17,367
At Standard Conditions, dscfm	(Qs)	16,432	16,848	16,500	16,593

Method 1 Data

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source VEN Carbon Bed Inlet
Project No. 2021-1324O
Date: 05/07/21

Stack Parameters

Duct Orientation:	Vertical	
Duct Design:	Circular	
Distance from Far Wall to Outside of Port:	51.13	in
Nipple Length:	15.13	in
Depth of Duct:	36.00	in
Cross Sectional Area of Duct:	7.07	ft^2
No. of Test Ports:	2	
Distance A:	5.1	ft
Distance A Duct Diameters:	1.7	(must be > 0.5)
Distance B:	5.7	ft
Distance B Duct Diameters:	1.9	(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

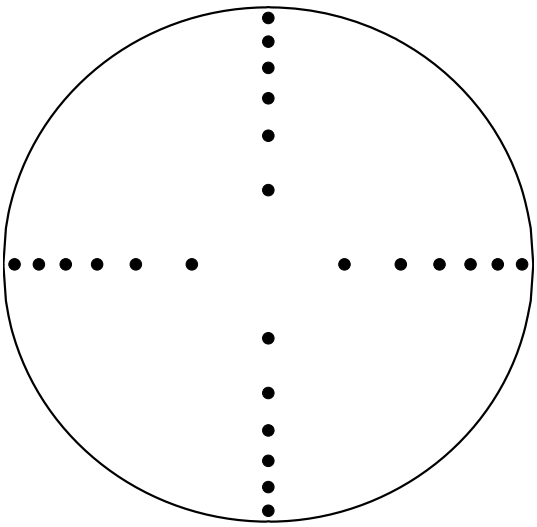
	2	3	4	5	6	7	8	9	10	11	12
1	14.6	--	6.7	--	4.4	--	3.2	--	2.6	--	2.1
2	85.4	--	25.0	--	14.6	--	10.5	--	8.2	--	6.7
3	--	--	75.0	--	29.6	--	19.4	--	14.6	--	11.8
4	--	--	93.3	--	70.4	--	32.3	--	22.6	--	17.7
5	--	--	--	--	85.4	--	67.7	--	34.2	--	25.0
6	--	--	--	--	95.6	--	80.6	--	65.8	--	35.6
7	--	--	--	--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

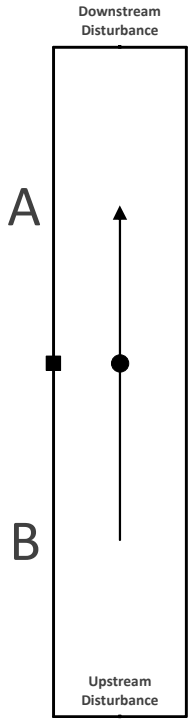
**Percent of stack diameter from inside wall to traverse point.*

Traverse Point	% of Diameter	Distance from inside wall	Distance from outside of port
1	2.1	1.00	16.13
2	6.7	2.41	17.54
3	11.8	4.25	19.37
4	17.7	6.37	21.50
5	25.0	9.00	24.13
6	35.6	12.82	27.94
7	64.4	23.18	38.31
8	75.0	27.00	42.13
9	82.3	29.63	44.75
10	88.2	31.75	46.88
11	93.3	33.59	48.71
12	97.9	35.00	50.13

Stack Diagram
A = 5.1 ft.
B = 5.7 ft.
Depth of Duct = 36 in.

Cross Sectional Area





Cyclonic Flow Check

Location Ramboll - Chemours Fayetteville Works Facility, NC
Source VEN Carbon Bed Inlet
Project No. 2021-1324O
Date 05/07/21

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

Method 4 Data

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

Run 1	Date:	5/7/21						
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	852.4	1152.4
Final Mass, g	0.0	2.0	102.0	102.0	100.0	2.0	870.6	1178.6
Gain	0.0	2.0	2.0	2.0	0.0	2.0	18.2	26.2
Run 2	**Date:**	5/7/21						
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	824.6	1124.6
Final Mass, g	0.0	2.0	104.0	100.0	100.0	0.0	844.8	1150.8
Gain	0.0	2.0	4.0	0.0	0.0	0.0	20.2	26.2
Run 3	**Date:**	5/7/21						
Impinger No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
Contents	XAD Trap	Empty	H2O	H2O	H2O	XAD Trap	Silica	--
Initial Mass, g	0.0	0.0	100.0	100.0	100.0	0.0	864.2	1164.2
Final Mass, g	0.0	0.0	104.0	102.0	100.0	0.0	882.8	1188.8
Gain	0.0	0.0	4.0	2.0	0.0	0.0	18.6	24.6

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	9:55	**Source:**	VEN Carbon Bed Inlet	
Date:	5/7/21	Run 1 VALID	**End Time:**	11:57	**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:	5		Est. Tm:	75	°F	OTM-45	Pb:	30.23 in. Hg	Vlc (ml)
Barometric:	29.88	in. Hg	Y:	0.991		Est. Ts:	78	°F		Pg:	-7.20 in. WC	26.2
Static Press:	-3.20	in. WC	ΔH @ (in.WC):	1.880		Est. ΔP:	0.32	in. WC		O_2:	20.9 %	K-FACTOR
Stack Press:	29.64	in. Hg	Probe ID:	P4-3		Est. Dn:	0.271	in.		CO_2:	0.0 %	4.808
CO_2:	0.0	%	Liner Material:	glass		Target Rate:	0.75	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):	0.008	0.009	0.008	--	0.005	Mid 1 (cf) 5.828 6.108 0.280
Md:	28.84	lb/lb-mole	Nozzle ID:	G-2	glass	Vacuum (in Hg):	12	12	12	--	14	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): 0.280

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	608.874	0.20	63	66	0.96	0.96	5	74	75	58	43	104.5	25.23
2	4.00	8.00	611.132	0.21	65	66	1.02	1.00	5	75	76	51	42	99.5	25.85
3	8.00	12.00	613.344	0.38	68	70	1.83	1.80	5	75	76	46	42	99.6	34.91
4	12.00	16.00	616.320	0.38	68	73	1.82	1.80	6	75	77	45	39	94.1	35.01
5	16.00	20.00	619.122	0.51	70	73	2.45	2.40	7	76	78	46	40	92.7	40.56
6	20.00	24.00	622.330	0.54	71	73	2.59	2.60	7	77	78	46	40	90.7	41.73
7	24.00	28.00	625.563	0.54	71	73	2.60	2.10	7	78	79	46	40	94.1	41.73
8	28.00	32.00	628.922	0.60	71	74	2.88	2.90	8	78	80	45	41	90.8	44.03
9	32.00	36.00	632.332	0.58	71	74	2.78	2.80	8	79	80	45	41	94.2	43.29
10	36.00	40.00	635.811	0.52	72	74	2.50	2.50	8	80	80	45	40	94.2	40.99
11	40.00	44.00	639.110	0.54	72	74	2.59	2.60	8	79	78	44	40	95.6	41.77
12	44.00	48.00	642.520	0.54	72	74	2.60	2.60	8	78	79	44	39	92.6	41.77
1	48.00	52.00	645.828	0.21	72	72	1.02	1.00	5	79	78	52	47	98.9	26.00
2	52.00	56.00	648.041	0.48	74	76	2.31	2.31	7	80	79	44	46	105.1	39.46
3	56.00	60.00	651.589	0.60	76	76	2.89	2.90	9	82	80	45	46	98.4	44.12
4	60.00	64.00	655.310	0.70	76	76	3.37	3.40	10	84	82	45	47	100.1	47.65
5	64.00	68.00	659.393	0.68	76	76	3.28	3.30	10	83	80	47	49	94.9	46.96
6	68.00	72.00	663.210	0.68	80	77	3.29	3.30	10	82	79	48	49	101.0	47.01
7	72.00	76.00	667.298	0.64	81	77	3.11	3.10	10	82	80	49	50	99.1	45.61
8	76.00	80.00	671.199	0.55	81	77	2.67	2.70	8	82	81	49	51	101.3	42.28
9	80.00	84.00	674.898	0.58	81	77	2.82	2.80	8	83	82	49	50	101.1	43.41
10	84.00	88.00	678.689	0.52	82	78	2.53	2.50	8	82	83	50	51	98.8	41.15
11	88.00	92.00	682.199	0.54	82	78	2.62	2.60	8	83	84	50	52	102.5	41.93
12	92.00	96.00	685.911	0.50	83	78	2.43	2.50	8	82	84	50	52	94.9	40.35
	Final DGM:		689.225												

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	80.071 ft^3	0.51 in. WC	73.9 °F	74.3 °F	10	2.436 in. WC	98.4	0.015	-2.1

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	12:30	**Source:**	VEN Carbon Bed Inlet	
Date:	5/7/21	Run 2 VALID	**End Time:**	14:24	**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:	5		Est. Tm:	74	°F	OTM-45	Pb:	30.23	in. Hg	Vlc (ml)
Barometric:	29.88	in. Hg	Y:	0.991		Est. Ts:	74	°F		Pg:	-7.80	in. WC	26.2
Static Press:	-3.20	in. WC	ΔH @ (in.WC):	1.880		Est. ΔP:	0.51	in. WC		O_2:	20.9	%	K-FACTOR
Stack Press:	29.64	in. Hg	Probe ID:	P4-3		Est. Dn:	0.241	in.		CO_2:	0.0	%	4.83
CO_2:	0.0	%	Liner Material:	glass		Target Rate:	0.75	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):	0.005	0.005	0.005	--	0.009	Mid 1 (cf)	0.671 / 0.874 / 0.203
Md:	28.84	lb/lb-mole	Nozzle ID:	G-2	glass	Vacuum (in Hg):	12	10	12	--	16	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):	0.203

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	689.998	0.28	81	80	1.36	1.40	5	84	85	64	52	91.7	30.25
2	4.00	8.00	692.388	0.40	0	80	1.65	1.90	6	84	85	53	54	106.6	36.15
3	8.00	12.00	695.210	0.38	85	81	1.85	1.90	6	83	84	53	50	95.3	35.27
4	12.00	16.00	698.119	0.52	85	81	2.53	2.50	8	88	89	49	46	97.7	41.26
5	16.00	20.00	701.601	0.58	86	81	2.82	2.80	8	88	89	49	45	98.1	43.58
6	20.00	24.00	705.299	0.58	86	81	2.82	2.80	8	88	89	47	43	98.2	43.58
7	24.00	28.00	709.001	0.54	87	81	2.64	2.60	8	89	90	46	46	102.0	42.05
8	28.00	32.00	712.722	0.54	87	81	2.64	2.61	8	88	91	47	46	94.5	42.05
9	32.00	36.00	716.168	0.58	88	82	2.83	2.80	8	91	90	47	47	97.9	43.62
10	36.00	40.00	719.866	0.55	88	82	2.68	2.70	8	89	91	47	44	97.7	42.47
11	40.00	44.00	723.460	0.55	88	82	2.68	2.70	8	89	90	47	45	101.5	42.47
12	44.00	48.00	727.198	0.52	89	82	2.54	2.60	8	88	91	47	46	96.8	41.30
1	48.00	52.00	730.671	0.22	86	82	1.07	1.10	5	92	91	54	46	98.7	26.86
2	52.00	56.00	732.971	0.50	86	82	2.43	2.50	7	94	92	52	46	98.3	40.50
3	56.00	60.00	736.411	0.60	89	82	2.93	2.90	8	93	90	49	42	92.1	44.36
4	60.00	64.00	739.955	0.65	90	83	3.17	3.20	9	92	93	49	43	93.4	46.22
5	64.00	68.00	743.699	0.65	90	83	3.17	3.20	10	91	92	50	43	92.4	46.22
6	68.00	72.00	747.400	0.67	90	83	3.27	3.30	10	92	92	50	44	98.3	46.92
7	72.00	76.00	751.400	0.63	90	83	3.08	3.10	10	92	92	51	45	98.8	45.50
8	76.00	80.00	755.300	0.60	90	83	2.93	2.90	10	92	92	51	45	96.0	44.40
9	80.00	84.00	759.000	0.60	90	83	2.93	2.90	10	92	92	51	46	98.6	44.40
10	84.00	88.00	762.800	0.59	90	83	2.88	2.90	10	89	93	51	46	102.0	44.03
11	88.00	92.00	766.700	0.59	91	83	2.89	2.90	10	90	91	52	47	96.6	44.03
12	92.00	96.00	770.400	0.59	91	83	2.89	2.90	10	90	91	52	47	98.3	44.03
	Final DGM:		774.167												

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	83.966 ft^3	0.54 in. WC	84.1 °F	82.0 °F	10	2.630 in. WC	98.8	0.015	-2.7

Alliance SOURCE TESTING

Isokinetic Field Data

Location:	Ramboll - Chemours Fayetteville Works Facility, NC		**Start Time:**	14:54	**Source:** VEN Carbon Bed Inlet
Date:	5/7/21	Run 3 VALID	**End Time:**	16:54	**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:	5	Est. Tm:	84 °F	OTM-45	Pb:	30.23 in. Hg	Vlc (ml)
Barometric:	29.88 in. Hg	Y:	0.991	Est. Ts:	82 °F		Pg:	-7.50 in. WC	24.6
Static Press:	-3.20 in. WC	ΔH @ (in.WC):	1.880	Est. ΔP:	0.54 in. WC		O_2:	20.9 %	K-FACTOR
Stack Press:	29.64 in. Hg	Probe ID:	P4-3	Est. Dn:	0.236 in.		CO_2:	0.0 %	4.854
CO_2:	0.0 %	Liner Material:	glass	Target Rate:	0.75 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):	0.009 / 0.007 / 0.007 / -- / 0.006		Mid 1 (cf)	5.282 / 5.490 / 0.208	
Md:	28.84 lb/lb-mole	Nozzle ID:	G-2 glass	Vacuum (in Hg):	12 / 10 / 12 / -- / 14		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):	0.208	

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	774.545	0.24	87	84	1.17	1.20	5	91	94	58	48	104.6	28.11
2	4.00	8.00	777.088	0.44	88	83	2.14	2.10	6	88	93	54	41	94.3	38.02
3	8.00	12.00	780.193	0.45	90	83	2.20	2.20	6	89	93	53	39	102.3	38.45
4	12.00	16.00	783.611	0.50	91	83	2.45	2.50	6	88	93	51	41	93.3	40.53
5	16.00	20.00	786.900	0.56	91	84	2.74	2.70	6	88	91	50	40	96.2	42.94
6	20.00	24.00	790.489	0.55	91	84	2.69	2.70	7	87	92	49	40	97.9	42.55
7	24.00	28.00	794.110	0.55	93	84	2.70	2.70	7	89	94	49	42	97.1	42.55
8	28.00	32.00	797.710	0.54	93	84	2.65	2.70	7	90	93	49	42	100.4	42.16
9	32.00	36.00	801.398	0.52	94	84	2.55	2.50	7	91	93	49	42	97.0	41.38
10	36.00	40.00	804.901	0.52	94	84	2.55	2.50	7	92	93	50	42	94.1	41.38
11	40.00	44.00	808.302	0.52	93	84	2.55	2.50	7	90	92	50	42	98.0	41.38
12	44.00	48.00	811.839	0.50	93	84	2.45	2.40	7	89	91	51	42	97.3	40.57
1	48.00	52.00	815.282	0.20	90	84	0.98	1.00	5	90	91	58	42	103.6	25.66
2	52.00	56.00	817.598	0.50	91	84	2.44	2.50	7	90	92	52	41	100.6	40.57
3	56.00	60.00	821.145	0.55	91	84	2.69	2.70	8	91	92	50	41	94.5	42.55
4	60.00	64.00	824.640	0.65	93	84	3.18	3.20	8	89	90	51	42	101.1	46.26
5	64.00	68.00	828.711	0.68	93	84	3.33	3.30	8	88	91	52	42	93.6	47.31
6	68.00	72.00	832.568	0.66	93	84	3.23	3.20	8	89	91	52	42	99.2	46.61
7	72.00	76.00	836.593	0.60	93	84	2.94	2.90	8	90	92	53	43	100.1	44.44
8	76.00	80.00	840.468	0.60	93	84	2.94	2.90	8	90	92	53	43	96.1	44.44
9	80.00	84.00	844.188	0.54	93	84	2.65	2.70	8	87	91	53	43	101.4	42.16
10	84.00	88.00	847.911	0.52	93	84	2.55	2.60	8	89	91	54	44	96.4	41.38
11	88.00	92.00	851.388	0.52	92	84	2.55	2.60	8	91	92	54	44	95.0	41.38
12	92.00	96.00	854.810	0.50	92	84	2.45	2.50	7	90	93	54	44	102.3	40.57
	Final DGM:		858.424												

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y_{qa}
	96.0 min	83.671 ft^3	0.52 in. WC	91.6 °F	83.9 °F	8	2.533 in. WC	99.2	0.014	-1.8

Appendix C

eurofins | Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 140-23115-1
Client Project/Site: VEN CB Outlet - OTM-45

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:
5/25/2021 3:24:35 PM

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

Table of Contents

Definitions/Glossary

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

Job ID: 140-23115-1

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: 140-23115-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-23115-1

Sample Receipt

The samples were received on 5/18/2021 5:00 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 1.7º 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 following samples were reported with elevated reporting limits for all analytes: S-1796,1797 VEN CB OUTLET R1 OTM-45 FH (140-23115-1), S-1803,1804 VEN CB OUTLET R2 OTM-45 FH (140-23115-5) and S-1810,1811 VEN CB OUTLET R3 OTM-45 FH (140-23115-9). 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): S-1796,1797 VEN CB OUTLET R1 OTM-45 FH (140-23115-1), S-1803,1804 VEN CB OUTLET R2 OTM-45 FH (140-23115-5) and S-1810,1811 VEN CB OUTLET R3 OTM-45 FH (140-23115-9). 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: S-1798,1799,1801 VEN CB OUTLET R1 OTM-45 BH (140-23115-2), S-1805,1806,1808 VEN CB OUTLET R2 OTM-45 BH (140-23115-6) and S-1812,1813,1815 VEN CB OUTLET R3 OTM-45 BH (140-23115-10). 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): S-1798,1799,1801 VEN CB OUTLET R1 OTM-45 BH (140-23115-2), S-1805,1806,1808 VEN CB OUTLET R2 OTM-45 BH (140-23115-6) and S-1812,1813,1815 VEN CB OUTLET R3 OTM-45 BH (140-23115-10). 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: 140-23115-1 (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: VEN CB Outlet - OTM-45

Job ID: 140-23115-1

Client Sample ID: S-1796,1797 VEN CB OUTLET R1 OTM-45 FH — Lab Sample ID: 140-23115-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	29.0		0.156	0.0906	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1798,1799,1801 VEN CB OUTLET R1 OTM-45 BH — Lab Sample ID: 140-23115-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	12.6		0.576	0.504	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1800 VEN CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-23115-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0156	J	0.0737	0.0122	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1802 VEN CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-23115-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00644		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1803,1804 VEN CB OUTLET R2 OTM-45 FH — Lab Sample ID: 140-23115-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	28.5		0.188	0.109	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1805,1806,1808 VEN CB OUTLET R2 OTM-45 BH — Lab Sample ID: 140-23115-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	24.3		0.288	0.252	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1807 VEN CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-23115-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0366	J	0.0737	0.0122	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1809 VEN CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-23115-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00564		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1810,1811 VEN CB OUTLET R3 OTM-45 FH — Lab Sample ID: 140-23115-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	41.2		0.222	0.129	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: VEN CB Outlet - OTM-45

Job ID: 140-23115-1

Client Sample ID: S-1812,1813,1815 VEN CB OUTLET R3 OTM-45 BH

Lab Sample ID: 140-23115-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	101		2.88	2.52	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1814 VEN CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23115-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0722	J	0.0737	0.0122	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: S-1816 VEN CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23115-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00534		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: VEN CB Outlet - OTM-45

Job ID: 140-23115-1

Client Sample ID: S-1796,1797 VEN CB OUTLET R1 OTM-45 FH

Lab Sample ID: 140-23115-1

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	29.0		0.156	0.0906	ug/Sample		05/18/21 12:47	05/21/21 16:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*90*		*25 - 150*	*05/18/21 12:47*	*05/21/21 16:44*	*1*

Client Sample ID: S-1798,1799,1801 VEN CB OUTLET R1 OTM-45 BH

Lab Sample ID: 140-23115-2

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	12.6		0.576	0.504	ug/Sample		05/18/21 09:16	05/22/21 12:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*95*		*25 - 150*	*05/18/21 09:16*	*05/22/21 12:40*	*1*

Client Sample ID: S-1800 VEN CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23115-3

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	0.0156	J	0.0737	0.0122	ug/Sample		05/18/21 13:49	05/18/21 18:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*95*		*25 - 150*	*05/18/21 13:49*	*05/18/21 18:33*	*1*

Client Sample ID: S-1802 VEN CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23115-4

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	0.00644		0.00160	0.00140	ug/Sample		05/18/21 09:16	05/22/21 12:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*57*		*25 - 150*	*05/18/21 09:16*	*05/22/21 12:48*	*1*

Client Sample ID: S-1803,1804 VEN CB OUTLET R2 OTM-45 FH

Lab Sample ID: 140-23115-5

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	28.5		0.188	0.109	ug/Sample		05/18/21 12:47	05/21/21 16:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*110*		*25 - 150*	*05/18/21 12:47*	*05/21/21 16:58*	*1*

Client Sample ID: S-1805,1806,1808 VEN CB OUTLET R2 OTM-45 BH

Lab Sample ID: 140-23115-6

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	24.3		0.288	0.252	ug/Sample		05/18/21 09:16	05/22/21 12:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*25 - 150*	*05/18/21 09:16*	*05/22/21 12:57*	*1*

Client Sample ID: S-1807 VEN CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23115-7

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	0.0366	J	0.0737	0.0122	ug/Sample		05/18/21 13:49	05/18/21 18:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*96*		*25 - 150*	*05/18/21 13:49*	*05/18/21 18:42*	*1*

Client Sample ID: S-1809 VEN CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23115-8

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	0.00564		0.00160	0.00140	ug/Sample		05/18/21 09:16	05/22/21 13:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*70*		*25 - 150*	*05/18/21 09:16*	*05/22/21 13:06*	*1*

Client Sample ID: S-1810,1811 VEN CB OUTLET R3 OTM-45 FH

Lab Sample ID: 140-23115-9

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	41.2		0.222	0.129	ug/Sample		05/18/21 12:47	05/21/21 17:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*90*		*25 - 150*	*05/18/21 12:47*	*05/21/21 17:08*	*1*

Client Sample ID: S-1812,1813,1815 VEN CB OUTLET R3 OTM-45 BH

Lab Sample ID: 140-23115-10

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	101		2.88	2.52	ug/Sample		05/18/21 09:16	05/22/21 13:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*94*		*25 - 150*	*05/18/21 09:16*	*05/22/21 13:15*	*1*

Client Sample ID: S-1814 VEN CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23115-11

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	0.0722	J	0.0737	0.0122	ug/Sample		05/18/21 13:49	05/18/21 18:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*25 - 150*	*05/18/21 13:49*	*05/18/21 18:51*	*1*

Client Sample ID: S-1816 VEN CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23115-12

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	0.00534		0.00160	0.00140	ug/Sample		05/18/21 09:16	05/22/21 13:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*75*		*25 - 150*	*05/18/21 09:16*	*05/22/21 13:24*	*1*

Default Detection Limits

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

Job ID: 140-23115-1

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: VEN CB Outlet - OTM-45

Job ID: 140-23115-1

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)						
140-23115-1	S-1796,1797 VEN CB OUTLET	90						
140-23115-2	S-1798,1799,1801 VEN CB OUTLET R1 OTM-45 BH	95						
140-23115-3	S-1800 VEN CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND	95						
140-23115-4	S-1802 VEN CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	57						
140-23115-5	S-1803,1804 VEN CB OUTLET R2 OTM-45 FH	110						
140-23115-6	S-1805,1806,1808 VEN CB OUTLET R2 OTM-45 BH	98						
140-23115-7	S-1807 VEN CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND	96						
140-23115-8	S-1809 VEN CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	70						
140-23115-9	S-1810,1811 VEN CB OUTLET R3 OTM-45 FH	90						
140-23115-10	S-1812,1813,1815 VEN CB OUTLET R3 OTM-45 BH	94						
140-23115-11	S-1814 VEN CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND	100						
140-23115-12	S-1816 VEN CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	75						
LCS 140-49922/2-B	Lab Control Sample	85						
LCS 140-49940/2-B	Lab Control Sample	80						
LCS 140-49946/2-B	Lab Control Sample	103						
LCSD 140-49922/3-B	Lab Control Sample Dup	81						
LCSD 140-49940/3-B	Lab Control Sample Dup	83						
LCSD 140-49946/3-B	Lab Control Sample Dup	95						
MB 140-49922/1-B	Method Blank	78						
MB 140-49940/1-B	Method Blank	81						
MB 140-49946/1-B	Method Blank	99						

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-49922/1-B
Matrix: Air
Analysis Batch: 50095

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49922

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		05/18/21 09:16	05/22/21 12:13	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*78*		*25 - 150*	*05/18/21 09:16*	*05/22/21 12:13*	*1*

Lab Sample ID: LCS 140-49922/2-B
Matrix: Air
Analysis Batch: 50095

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49922

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.02418		ug/Sample		121	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*85*		*25 - 150*

Lab Sample ID: LCSD 140-49922/3-B
Matrix: Air
Analysis Batch: 50095

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49922

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0200	0.02425		ug/Sample		121	60 - 140	0	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*81*		*25 - 150*

Lab Sample ID: MB 140-49940/1-B
Matrix: Air
Analysis Batch: 50089

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49940

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		05/18/21 12:47	05/21/21 16:18	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*81*		*25 - 150*	*05/18/21 12:47*	*05/21/21 16:18*	*1*

Lab Sample ID: LCS 140-49940/2-B
Matrix: Air
Analysis Batch: 50089

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49940

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.02482		ug/Sample		124	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*80*		*25 - 150*

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

Lab Sample ID: LCSD 140-49940/3-B
Matrix: Air
Analysis Batch: 50089

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49940

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02516		ug/Sample		126	60 - 140	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*83*		*25 - 150*

Lab Sample ID: MB 140-49946/1-B
Matrix: Air
Analysis Batch: 49964

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49946

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		05/18/21 13:49	05/18/21 18:07	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*25 - 150*	*05/18/21 13:49*	*05/18/21 18:07*	*1*

Lab Sample ID: LCS 140-49946/2-B
Matrix: Air
Analysis Batch: 49964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49946

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0100	0.01252		ug/Sample		125	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*103*		*25 - 150*

Lab Sample ID: LCSD 140-49946/3-B
Matrix: Air
Analysis Batch: 49964

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49946

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.01344		ug/Sample		134	60 - 140	7	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: VEN CB Outlet - OTM-45

Job ID: 140-23115-1

LCMS

Prep Batch: 49922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-2	S-1798,1799,1801 VEN CB OUTLET R1 OTM-45	Total/NA	Air	None	
140-23115-4	S-1802 VEN CB OUTLET R1 OTM-45 BREAKTH	Total/NA	Air	None	
140-23115-6	S-1805,1806,1808 VEN CB OUTLET R2 OTM-45	Total/NA	Air	None	
140-23115-8	S-1809 VEN CB OUTLET R2 OTM-45 BREAKTH	Total/NA	Air	None	
140-23115-10	S-1812,1813,1815 VEN CB OUTLET R3 OTM-45	Total/NA	Air	None	
140-23115-12	S-1816 VEN CB OUTLET R3 OTM-45 BREAKTH	Total/NA	Air	None	
MB 140-49922/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49922/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49922/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 49940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-1	S-1796,1797 VEN CB OUTLET R1 OTM-45 FH	Total/NA	Air	None	
140-23115-5	S-1803,1804 VEN CB OUTLET R2 OTM-45 FH	Total/NA	Air	None	
140-23115-9	S-1810,1811 VEN CB OUTLET R3 OTM-45 FH	Total/NA	Air	None	
MB 140-49940/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49940/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49940/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 49946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-3	S-1800 VEN CB OUTLET R1 OTM-45 IMPINGEF	Total/NA	Air	None	
140-23115-7	S-1807 VEN CB OUTLET R2 OTM-45 IMPINGEF	Total/NA	Air	None	
140-23115-11	S-1814 VEN CB OUTLET R3 OTM-45 IMPINGEF	Total/NA	Air	None	
MB 140-49946/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49946/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49946/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 49961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-3	S-1800 VEN CB OUTLET R1 OTM-45 IMPINGEF	Total/NA	Air	Split	49946
140-23115-7	S-1807 VEN CB OUTLET R2 OTM-45 IMPINGEF	Total/NA	Air	Split	49946
140-23115-11	S-1814 VEN CB OUTLET R3 OTM-45 IMPINGEF	Total/NA	Air	Split	49946
MB 140-49946/1-B	Method Blank	Total/NA	Air	Split	49946
LCS 140-49946/2-B	Lab Control Sample	Total/NA	Air	Split	49946
LCSD 140-49946/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49946

Analysis Batch: 49964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-3	S-1800 VEN CB OUTLET R1 OTM-45 IMPINGEF	Total/NA	Air	537 (modified)	49961
140-23115-7	S-1807 VEN CB OUTLET R2 OTM-45 IMPINGEF	Total/NA	Air	537 (modified)	49961
140-23115-11	S-1814 VEN CB OUTLET R3 OTM-45 IMPINGEF	Total/NA	Air	537 (modified)	49961
MB 140-49946/1-B	Method Blank	Total/NA	Air	537 (modified)	49961
LCS 140-49946/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49961
LCSD 140-49946/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49961

Cleanup Batch: 49976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-1	S-1796,1797 VEN CB OUTLET R1 OTM-45 FH	Total/NA	Air	Split	49940
140-23115-5	S-1803,1804 VEN CB OUTLET R2 OTM-45 FH	Total/NA	Air	Split	49940
140-23115-9	S-1810,1811 VEN CB OUTLET R3 OTM-45 FH	Total/NA	Air	Split	49940

LCMS (Continued)

Cleanup Batch: 49976 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-49940/1-B	Method Blank	Total/NA	Air	Split	49940
LCS 140-49940/2-B	Lab Control Sample	Total/NA	Air	Split	49940
LCSD 140-49940/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49940

Cleanup Batch: 50020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-2	S-1798,1799,1801 VEN CB OUTLET R1 OTM-45	Total/NA	Air	Split	49922
140-23115-4	S-1802 VEN CB OUTLET R1 OTM-45 BREAKTH	Total/NA	Air	Split	49922
140-23115-6	S-1805,1806,1808 VEN CB OUTLET R2 OTM-45	Total/NA	Air	Split	49922
140-23115-8	S-1809 VEN CB OUTLET R2 OTM-45 BREAKTH	Total/NA	Air	Split	49922
140-23115-10	S-1812,1813,1815 VEN CB OUTLET R3 OTM-45	Total/NA	Air	Split	49922
140-23115-12	S-1816 VEN CB OUTLET R3 OTM-45 BREAKTH	Total/NA	Air	Split	49922
MB 140-49922/1-B	Method Blank	Total/NA	Air	Split	49922
LCS 140-49922/2-B	Lab Control Sample	Total/NA	Air	Split	49922
LCSD 140-49922/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49922

Cleanup Batch: 50063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-1	S-1796,1797 VEN CB OUTLET R1 OTM-45 FH	Total/NA	Air	Dilution	49976
140-23115-5	S-1803,1804 VEN CB OUTLET R2 OTM-45 FH	Total/NA	Air	Dilution	49976
140-23115-9	S-1810,1811 VEN CB OUTLET R3 OTM-45 FH	Total/NA	Air	Dilution	49976

Analysis Batch: 50089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-1	S-1796,1797 VEN CB OUTLET R1 OTM-45 FH	Total/NA	Air	537 (modified)	50063
140-23115-5	S-1803,1804 VEN CB OUTLET R2 OTM-45 FH	Total/NA	Air	537 (modified)	50063
140-23115-9	S-1810,1811 VEN CB OUTLET R3 OTM-45 FH	Total/NA	Air	537 (modified)	50063
MB 140-49940/1-B	Method Blank	Total/NA	Air	537 (modified)	49976
LCS 140-49940/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49976
LCSD 140-49940/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49976

Analysis Batch: 50095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-2	S-1798,1799,1801 VEN CB OUTLET R1 OTM-45	Total/NA	Air	537 (modified)	50096
140-23115-4	S-1802 VEN CB OUTLET R1 OTM-45 BREAKTH	Total/NA	Air	537 (modified)	50020
140-23115-6	S-1805,1806,1808 VEN CB OUTLET R2 OTM-45	Total/NA	Air	537 (modified)	50096
140-23115-8	S-1809 VEN CB OUTLET R2 OTM-45 BREAKTH	Total/NA	Air	537 (modified)	50020
140-23115-10	S-1812,1813,1815 VEN CB OUTLET R3 OTM-45	Total/NA	Air	537 (modified)	50096
140-23115-12	S-1816 VEN CB OUTLET R3 OTM-45 BREAKTH	Total/NA	Air	537 (modified)	50020
MB 140-49922/1-B	Method Blank	Total/NA	Air	537 (modified)	50020
LCS 140-49922/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	50020
LCSD 140-49922/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	50020

Cleanup Batch: 50096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23115-2	S-1798,1799,1801 VEN CB OUTLET R1 OTM-45	Total/NA	Air	Dilution	50020
140-23115-6	S-1805,1806,1808 VEN CB OUTLET R2 OTM-45	Total/NA	Air	Dilution	50020
140-23115-10	S-1812,1813,1815 VEN CB OUTLET R3 OTM-45	Total/NA	Air	Dilution	50020

Lab Chronicle

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

Job ID: 140-23115-1

Client Sample ID: S-1796,1797 VEN CB OUTLET R1 OTM-45 FH

Lab Sample ID: 140-23115-1

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	125 mL	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Cleanup	Dilution			400 uL	10000 uL	50063	05/20/21 17:54	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 16:44	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: S-1798,1799,1801 VEN CB OUTLET R1 OTM-45 BH

Lab Sample ID: 140-23115-2

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Cleanup	Dilution			500 uL	10000 uL	50096	05/22/21 10:37	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 12:40	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: S-1800 VEN CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23115-3

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 18:33	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: S-1802 VEN CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23115-4

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 12:48	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

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

Job ID: 140-23115-1

Client Sample ID: S-1803,1804 VEN CB OUTLET R2 OTM-45 FH

Lab Sample ID: 140-23115-5

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	94 mL	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Cleanup	Dilution			250 uL	10000 uL	50063	05/20/21 17:54	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 16:58	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: S-1805,1806,1808 VEN CB OUTLET R2 OTM-45 BH

Lab Sample ID: 140-23115-6

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Cleanup	Dilution			1000 uL	10000 uL	50096	05/22/21 10:37	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 12:57	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: S-1807 VEN CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23115-7

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 18:42	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: S-1809 VEN CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23115-8

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 13:06	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: S-1810,1811 VEN CB OUTLET R3 OTM-45 FH

Lab Sample ID: 140-23115-9

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	111 mL	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Cleanup	Dilution			250 uL	10000 uL	50063	05/20/21 17:54	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 17:08	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: S-1812,1813,1815 VEN CB OUTLET R3 OTM-45 BH

Lab Sample ID: 140-23115-10

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	50096	05/22/21 10:37	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 13:15	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: S-1814 VEN CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23115-11

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 18:51	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: S-1816 VEN CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23115-12

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 13:24	JRC	TAL KNX

Instrument ID: LCA

Lab Chronicle

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

Job ID: 140-23115-1

Client Sample ID: Method Blank
Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 140-49922/1-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 12:13	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 140-49940/1-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 16:18	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 140-49946/1-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 18:07	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 140-49922/2-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 12:22	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 140-49940/2-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 16:27	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

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

Job ID: 140-23115-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49946/2-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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 18:15	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49922/3-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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 12:31	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49940/3-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	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 16:36	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49946/3-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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 18:24	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: 140-23115-1
Project/Site: VEN CB Outlet - OTM-45

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: VEN CB Outlet - OTM-45

Job ID: 140-23115-1

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: VEN CB Outlet - OTM-45

Job ID: 140-23115-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-23115-1	S-1796,1797 VEN CB OUTLET R1 OTM-45 FH	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-2	S-1798,1799,1801 VEN CB OUTLET R1 OTM-45 BH	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-3	S-1800 VEN CB OUTLET R1 OTM-45 IMPINGER 1,2&3 COND	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-4	S-1802 VEN CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-5	S-1803,1804 VEN CB OUTLET R2 OTM-45 FH	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-6	S-1805,1806,1808 VEN CB OUTLET R2 OTM-45 BH	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-7	S-1807 VEN CB OUTLET R2 OTM-45 IMPINGER 1,2&3 COND	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-8	S-1809 VEN CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-9	S-1810,1811 VEN CB OUTLET R3 OTM-45 FH	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-10	S-1812,1813,1815 VEN CB OUTLET R3 OTM-45 BH	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-11	S-1814 VEN CB OUTLET R3 OTM-45 IMPINGER 1,2&3 COND	Air	05/17/21 00:00	05/18/21 05:00	
140-23115-12	S-1816 VEN CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/17/21 00:00	05/18/21 05:00	

Request for Analysis/Chain-of-Custody – RFA/COC #002
The Chemours Company – Fayetteville NC
VEN Carbon Bed Outlet

140-23115 Chain of Custody

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

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt

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 Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN
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)	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
S-1796 VEN CB Outlet R1 OTM-45 Filter (Combine with *S-1797*)	1	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA 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 Particulate Filter sample. Analyze for HFPO-DA using Method 8321A-HFPO.
S-1797 VEN CB Outlet R1 OTM-45 FH of Filter Holder & Probe Methanol Rinse (Combine with *S-1796*)	1	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
S-1798 VEN CB Outlet R1 OTM-45 XAD-2 Resin Tube	1	5/17/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using Method 8321A-HFPO.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
S-1799 VEN CB Outlet R1 OTM-45 BH of Filter Holder & Coil Condenser Methanol Rinse (Combine with *S-1798*)	1	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA using Method 8321A-HFPO.
S-1800 VEN CB Outlet R1 OTM-45 Impingers 1,2 & 3 Condensate	1	5/17/21		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Analyze the sample for HFPO-DA.
S-1801 VEN CB Outlet R1 OTM-45 Impinger Glassware MeOH Rinse (Combine with *S-1798*)	1	5/17/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
S-1802 VEN CB Outlet R1 OTM-45 Breakthrough XAD-2 Resin Tube	1	5/17/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using Method 8321A-HFPO.
S-1803 VEN CB Outlet R2 OTM-45 Filter (Combine with *S-1804*)	2	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA 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 Particulate Filter sample. Analyze for HFPO-DA using Method 8321A-HFPO.
S-1804 VEN CB Outlet R2 OTM-45 Front Half of Filter Holder & Probe Methanol Rinse (Combine with *S-1803*)	2	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate 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
S-1805 VEN CB Outlet R2 OTM-45 XAD-2 Resin Tube	2	5/17/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using Method 8321A-HFPO.
S-1806 VEN CB Outlet R2 OTM-45 BH of Filter Holder & Coil Condenser Methanol Rinse (Combine with *S-1805*)	2	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA using Method 8321A-HFPO.
S-1807 VEN CB Outlet R2 OTM-45 Impingers 1,2 & 3 Condensate	2	5/17/21		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Analyze the sample for HFPO-DA.
S-1808 VEN CB Outlet R2 OTM-45 Impinger Glassware MeOH Rinse (Combine with *S-1805*)	2	5/17/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
S-1809 VEN CB Outlet R2 OTM-45 Breakthrough XAD-2 Resin Tube	2	5/17/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using Method 8321A-HFPO.
S-1810 VEN CB Outlet R3 OTM-45 Filter (Combine with *S-1811*)	3	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA 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 Particulate Filter sample. Analyze for HFPO-DA using Method 8321A-HFPO.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
S-1811 VEN CB Outlet R3 OTM-45 Front Half of Filter Holder & Probe Methanol Rinse (Combine with *S-1810*)	3	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
S-1812 VEN CB Outlet R3 OTM-45 XAD-2 Resin Tube	3	5/17/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using Method 8321A-HFPO.
S-1813 VEN CB Outlet R3 OTM-45 BH of Filter Holder & Coil Condenser Methanol Rinse (Combine with *S-1812*)	3	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA using Method 8321A-HFPO.
S-1814 VEN CB Outlet R3 OTM-45 Impingers 1,2 & 3 Condensate	3	5/17/21		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Analyze the sample for HFPO-DA.
S-1815 VEN CB Outlet R3 OTM-45 Impinger Glassware MeOH Rinse (Combine with *S-1812*)	3	5/17/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
S-1816 VEN CB Outlet R3 OTM-45 Breakthrough XAD-2 Resin Tube	3	5/17/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using Method 8321A-HFPO.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 1.6/CT1.7°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):	NO CUSTODY SEALS, HAND DELIVERED

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Patrick Grady	Alliance	5/17/21 1805
Accepted By:	Don Cahill	ETA KNOX	5/17/21 1805
Relinquished By:	Don Cahill	ETA KNOX	5/18/21 0130
Accepted By:	Ryan Cannon	ETA KNOX	5-18-21 05:06
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 : SC71 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: Rmy Vaman Date: 5-18-21

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: 140-23116-1
Client Project/Site: VEN CB Inlet - OTM-45

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:
5/25/2021 3:27:57 PM

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

Table of Contents

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: 140-23116-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-23116-1

Receipt

The samples were received on 5/18/2021 5:00 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 0.9º 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 following samples were reported with elevated reporting limits for all analytes: A-5985 VEN CARBON BED INLET R1 OTM-45 IMPINGERS 1,2&3 COND (140-23116-3) and A-5999 VEN CARBON BED INLET R3 OTM-45 IMPINGERS 1,2&3 COND (140-23116-11). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples A-5985 VEN CARBON BED INLET R1 OTM-45 IMPINGERS 1,2&3 COND (140-23116-3) and A-5999 VEN CARBON BED INLET R3 OTM-45 IMPINGERS 1,2&3 COND (140-23116-11) 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: A-5981,5982 VEN CARBON BED INLET R1 OTM-45 FH (140-23116-1), A-5988,5989 VEN CARBON BED INLET R2 OTM-45 FH (140-23116-5) and A-5995,5996 VEN CARBON BED INLET R3 OTM-45 FH (140-23116-9). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): The following sample was reported with elevated reporting limits for all analytes: A-5987 VEN CARBON BED INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-23116-4). 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: A-5983,5984,5986 VEN CARBON BED INLET R1 OTM-45 BH (140-23116-2) and A-5990,5991,5993 VEN CARBON BED INLET R2 OTM-45 BH (140-23116-6). The sample was analyzed at a dilution based on screening results.

Job ID: 140-23116-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: A-5997,5998,6000 VEN CARBON BED INLET R3 OTM-45 BH (140-23116-10) and A-6001 VEN CARBON BED INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-23116-12). The sample was analyzed at a dilution based on screening results.

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

Organic Prep

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: VEN CB Inlet - OTM-45

Job ID: 140-23116-1

Client Sample ID: A-5981,5982 VEN CARBON BED INLET R1 OTM-45 FH — Lab Sample ID: 140-23116-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	282		2.25	1.31	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: A-5983,5984,5986 VEN CARBON BED INLET R1 OTM-45 BH — Lab Sample ID: 140-23116-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1160		28.8	25.2	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: A-5985 VEN CARBON BED INLET R1 OTM-45 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-23116-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	18.5		0.225	0.0371	ug/Sample	3		537 (modified)	Total/NA

Client Sample ID: A-5987 VEN CARBON BED INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-23116-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.975		0.0160	0.0140	ug/Sample	10		537 (modified)	Total/NA

Client Sample ID: A-5988,5989 VEN CARBON BED INLET R2 OTM-45 FH — Lab Sample ID: 140-23116-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	274		2.20	1.28	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: A-5990,5991,5993 VEN CARBON BED INLET R2 OTM-45 BH — Lab Sample ID: 140-23116-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2320		28.8	25.2	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: A-5992 VEN CARBON BED INLET R2 OTM-45 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-23116-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0835		0.0725	0.0120	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: A-5994 VEN CARBON BED INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-23116-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0272		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: A-5995,5996 VEN CARBON BED INLET R3 OTM-45 FH — Lab Sample ID: 140-23116-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	284		2.90	1.68	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

Job ID: 140-23116-1

Client Sample ID: A-5997,5998,6000 VEN CARBON BED INLET R3 OTM-45 BH

Lab Sample ID: 140-23116-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	5040		57.6	50.4	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: A-5999 VEN CARBON BED INLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23116-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	99.0		0.750	0.124	ug/Sample	10		537 (modified)	Total/NA

Client Sample ID: A-6001 VEN CARBON BED INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23116-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	8.75		0.160	0.140	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: A-5981,5982 VEN CARBON BED INLET R1 OTM-45 FH

Lab Sample ID: 140-23116-1

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	282		2.25	1.31	ug/Sample		05/18/21 12:47	05/21/21 17:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*25 - 150*	*05/18/21 12:47*	*05/21/21 17:22*	*1*

Client Sample ID: A-5983,5984,5986 VEN CARBON BED INLET R1 OTM-45 BH

Lab Sample ID: 140-23116-2

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	1160		28.8	25.2	ug/Sample		05/18/21 09:16	05/23/21 00:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*106*		*25 - 150*	*05/18/21 09:16*	*05/23/21 00:11*	*1*

Client Sample ID: A-5985 VEN CARBON BED INLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23116-3

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	18.5		0.225	0.0371	ug/Sample		05/18/21 13:49	05/19/21 12:01	3

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*25 - 150*	*05/18/21 13:49*	*05/19/21 12:01*	*3*

Client Sample ID: A-5987 VEN CARBON BED INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23116-4

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	0.975		0.0160	0.0140	ug/Sample		05/18/21 09:16	05/22/21 13:59	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*25 - 150*	*05/18/21 09:16*	*05/22/21 13:59*	*10*

Client Sample ID: A-5988,5989 VEN CARBON BED INLET R2 OTM-45 FH

Lab Sample ID: 140-23116-5

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	274		2.20	1.28	ug/Sample		05/18/21 12:47	05/21/21 17:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*94*		*25 - 150*	*05/18/21 12:47*	*05/21/21 17:32*	*1*

Client Sample ID: A-5990,5991,5993 VEN CARBON BED INLET R2 OTM-45 BH

Lab Sample ID: 140-23116-6

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	2320		28.8	25.2	ug/Sample		05/18/21 09:16	05/23/21 00:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*25 - 150*	*05/18/21 09:16*	*05/23/21 00:20*	*1*

Client Sample ID: A-5992 VEN CARBON BED INLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23116-7

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	0.0835		0.0725	0.0120	ug/Sample		05/18/21 13:49	05/18/21 19:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*90*		*25 - 150*	*05/18/21 13:49*	*05/18/21 19:08*	*1*

Client Sample ID: A-5994 VEN CARBON BED INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23116-8

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	0.0272		0.00160	0.00140	ug/Sample		05/18/21 09:16	05/22/21 14:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*74*		*25 - 150*	*05/18/21 09:16*	*05/22/21 14:25*	*1*

Client Sample ID: A-5995,5996 VEN CARBON BED INLET R3 OTM-45 FH

Lab Sample ID: 140-23116-9

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	284		2.90	1.68	ug/Sample		05/18/21 12:47	05/21/21 17:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*95*		*25 - 150*	*05/18/21 12:47*	*05/21/21 17:42*	*1*

Client Sample ID: A-5997,5998,6000 VEN CARBON BED INLET R3 OTM-45 BH

Lab Sample ID: 140-23116-10

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	5040		57.6	50.4	ug/Sample		05/18/21 09:16	05/24/21 21:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*108*		*25 - 150*	*05/18/21 09:16*	*05/24/21 21:12*	*1*

Client Sample ID: A-5999 VEN CARBON BED INLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23116-11

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	99.0		0.750	0.124	ug/Sample		05/18/21 13:49	05/19/21 12:10	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*104*		*25 - 150*	*05/18/21 13:49*	*05/19/21 12:10*	*10*

Client Sample ID: A-6001 VEN CARBON BED INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23116-12

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00
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	8.75		0.160	0.140	ug/Sample		05/18/21 09:16	05/24/21 21:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*114*		*25 - 150*	*05/18/21 09:16*	*05/24/21 21:21*	*1*

Default Detection Limits

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

Job ID: 140-23116-1

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: VEN CB Inlet - OTM-45

Job ID: 140-23116-1

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)						
140-23116-1	A-5981,5982 VEN CARBON BE	98						
140-23116-2	A-5983,5984,5986 VEN CARBON BED INLET R1 OTM-45 BH	106						
140-23116-3	A-5985 VEN CARBON BED INLET R1 OTM-45 IMPINGERS 1,2&3 COND	98						
140-23116-4	A-5987 VEN CARBON BED INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	99						
140-23116-5	A-5988,5989 VEN CARBON BED INLET R2 OTM-45 FH	94						
140-23116-6	A-5990,5991,5993 VEN CARBON BED INLET R2 OTM-45 BH	98						
140-23116-7	A-5992 VEN CARBON BED INLET R2 OTM-45 IMPINGERS 1,2&3 COND	90						
140-23116-8	A-5994 VEN CARBON BED INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	74						
140-23116-9	A-5995,5996 VEN CARBON BED INLET R3 OTM-45 FH	95						
140-23116-10	A-5997,5998,6000 VEN CARBON BED INLET R3 OTM-45 BH	108						
140-23116-11	A-5999 VEN CARBON BED INLET R3 OTM-45 IMPINGERS 1,2&3 COND	104						
140-23116-12	A-6001 VEN CARBON BED INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESI TUBE	114						
LCS 140-49922/2-B	Lab Control Sample	85						
LCS 140-49940/2-B	Lab Control Sample	80						
LCS 140-49946/2-B	Lab Control Sample	103						
LCSD 140-49922/3-B	Lab Control Sample Dup	81						
LCSD 140-49940/3-B	Lab Control Sample Dup	83						
LCSD 140-49946/3-B	Lab Control Sample Dup	95						
MB 140-49922/14-B	Method Blank	80						
MB 140-49922/1-B	Method Blank	78						
MB 140-49940/1-B	Method Blank	81						
MB 140-49946/1-B	Method Blank	99						

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-49922/14-B
Matrix: Air
Analysis Batch: 50095

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49922

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		05/18/21 09:16	05/22/21 14:16	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*80*		*25 - 150*	*05/18/21 09:16*	*05/22/21 14:16*	*1*

Lab Sample ID: MB 140-49922/1-B
Matrix: Air
Analysis Batch: 50095

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49922

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		05/18/21 09:16	05/22/21 12:13	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*78*		*25 - 150*	*05/18/21 09:16*	*05/22/21 12:13*	*1*

Lab Sample ID: LCS 140-49922/2-B
Matrix: Air
Analysis Batch: 50095

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49922

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.02418		ug/Sample		121	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*85*		*25 - 150*

Lab Sample ID: LCSD 140-49922/3-B
Matrix: Air
Analysis Batch: 50095

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49922

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02425		ug/Sample		121	60 - 140	0	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*81*		*25 - 150*

Lab Sample ID: MB 140-49940/1-B
Matrix: Air
Analysis Batch: 50089

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49940

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		05/18/21 12:47	05/21/21 16:18	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*81*		*25 - 150*	*05/18/21 12:47*	*05/21/21 16:18*	*1*

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

Lab Sample ID: LCS 140-49940/2-B
Matrix: Air
Analysis Batch: 50089

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49940

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.02482		ug/Sample		124	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*80*		*25 - 150*

Lab Sample ID: LCSD 140-49940/3-B
Matrix: Air
Analysis Batch: 50089

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49940

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02516		ug/Sample		126	60 - 140	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*83*		*25 - 150*

Lab Sample ID: MB 140-49946/1-B
Matrix: Air
Analysis Batch: 49964

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49946

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		05/18/21 13:49	05/18/21 18:07	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*25 - 150*	*05/18/21 13:49*	*05/18/21 18:07*	*1*

Lab Sample ID: LCS 140-49946/2-B
Matrix: Air
Analysis Batch: 49964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49946

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0100	0.01252		ug/Sample		125	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*103*		*25 - 150*

Lab Sample ID: LCSD 140-49946/3-B
Matrix: Air
Analysis Batch: 49964

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49946

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.01344		ug/Sample		134	60 - 140	7	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: VEN CB Inlet - OTM-45

Job ID: 140-23116-1

LCMS

Prep Batch: 49922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-2	A-5983,5984,5986 VEN CARBON BED INLET R	Total/NA	Air	None	
140-23116-4	A-5987 VEN CARBON BED INLET R1 OTM-45 E	Total/NA	Air	None	
140-23116-6	A-5990,5991,5993 VEN CARBON BED INLET R2	Total/NA	Air	None	
140-23116-8	A-5994 VEN CARBON BED INLET R2 OTM-45 E	Total/NA	Air	None	
140-23116-10	A-5997,5998,6000 VEN CARBON BED INLET R3	Total/NA	Air	None	
140-23116-12	A-6001 VEN CARBON BED INLET R3 OTM-45 E	Total/NA	Air	None	
MB 140-49922/14-B	Method Blank	Total/NA	Air	None	
MB 140-49922/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49922/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49922/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 49940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-1	A-5981,5982 VEN CARBON BED INLET R1 OTM	Total/NA	Air	None	
140-23116-5	A-5988,5989 VEN CARBON BED INLET R2 OTM	Total/NA	Air	None	
140-23116-9	A-5995,5996 VEN CARBON BED INLET R3 OTM	Total/NA	Air	None	
MB 140-49940/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49940/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49940/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 49946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-3	A-5985 VEN CARBON BED INLET R1 OTM-45 II	Total/NA	Air	None	
140-23116-7	A-5992 VEN CARBON BED INLET R2 OTM-45 II	Total/NA	Air	None	
140-23116-11	A-5999 VEN CARBON BED INLET R3 OTM-45 II	Total/NA	Air	None	
MB 140-49946/1-B	Method Blank	Total/NA	Air	None	
LCS 140-49946/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-49946/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 49961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-3	A-5985 VEN CARBON BED INLET R1 OTM-45 II	Total/NA	Air	Split	49946
140-23116-7	A-5992 VEN CARBON BED INLET R2 OTM-45 II	Total/NA	Air	Split	49946
140-23116-11	A-5999 VEN CARBON BED INLET R3 OTM-45 II	Total/NA	Air	Split	49946
MB 140-49946/1-B	Method Blank	Total/NA	Air	Split	49946
LCS 140-49946/2-B	Lab Control Sample	Total/NA	Air	Split	49946
LCSD 140-49946/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49946

Analysis Batch: 49964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-7	A-5992 VEN CARBON BED INLET R2 OTM-45 II	Total/NA	Air	537 (modified)	49961
MB 140-49946/1-B	Method Blank	Total/NA	Air	537 (modified)	49961
LCS 140-49946/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49961
LCSD 140-49946/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49961

Cleanup Batch: 49976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-1	A-5981,5982 VEN CARBON BED INLET R1 OTM	Total/NA	Air	Split	49940
140-23116-5	A-5988,5989 VEN CARBON BED INLET R2 OTM	Total/NA	Air	Split	49940
140-23116-9	A-5995,5996 VEN CARBON BED INLET R3 OTM	Total/NA	Air	Split	49940
MB 140-49940/1-B	Method Blank	Total/NA	Air	Split	49940

LCMS (Continued)

Cleanup Batch: 49976 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 140-49940/2-B	Lab Control Sample	Total/NA	Air	Split	49940
LCSD 140-49940/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49940

Analysis Batch: 49989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-3	A-5985 VEN CARBON BED INLET R1 OTM-45 II	Total/NA	Air	537 (modified)	49961
140-23116-11	A-5999 VEN CARBON BED INLET R3 OTM-45 II	Total/NA	Air	537 (modified)	49961

Cleanup Batch: 50020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-2	A-5983,5984,5986 VEN CARBON BED INLET R	Total/NA	Air	Split	49922
140-23116-4	A-5987 VEN CARBON BED INLET R1 OTM-45 E	Total/NA	Air	Split	49922
140-23116-6	A-5990,5991,5993 VEN CARBON BED INLET R2	Total/NA	Air	Split	49922
140-23116-8	A-5994 VEN CARBON BED INLET R2 OTM-45 E	Total/NA	Air	Split	49922
140-23116-10	A-5997,5998,6000 VEN CARBON BED INLET R3	Total/NA	Air	Split	49922
140-23116-12	A-6001 VEN CARBON BED INLET R3 OTM-45 E	Total/NA	Air	Split	49922
MB 140-49922/14-B	Method Blank	Total/NA	Air	Split	49922
MB 140-49922/1-B	Method Blank	Total/NA	Air	Split	49922
LCS 140-49922/2-B	Lab Control Sample	Total/NA	Air	Split	49922
LCSD 140-49922/3-B	Lab Control Sample Dup	Total/NA	Air	Split	49922

Cleanup Batch: 50063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-1	A-5981,5982 VEN CARBON BED INLET R1 OTM	Total/NA	Air	Dilution	49976
140-23116-5	A-5988,5989 VEN CARBON BED INLET R2 OTM	Total/NA	Air	Dilution	49976
140-23116-9	A-5995,5996 VEN CARBON BED INLET R3 OTM	Total/NA	Air	Dilution	49976

Analysis Batch: 50089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-1	A-5981,5982 VEN CARBON BED INLET R1 OTM	Total/NA	Air	537 (modified)	50063
140-23116-5	A-5988,5989 VEN CARBON BED INLET R2 OTM	Total/NA	Air	537 (modified)	50063
140-23116-9	A-5995,5996 VEN CARBON BED INLET R3 OTM	Total/NA	Air	537 (modified)	50063
MB 140-49940/1-B	Method Blank	Total/NA	Air	537 (modified)	49976
LCS 140-49940/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	49976
LCSD 140-49940/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	49976

Analysis Batch: 50095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-4	A-5987 VEN CARBON BED INLET R1 OTM-45 E	Total/NA	Air	537 (modified)	50020
140-23116-8	A-5994 VEN CARBON BED INLET R2 OTM-45 E	Total/NA	Air	537 (modified)	50020
MB 140-49922/14-B	Method Blank	Total/NA	Air	537 (modified)	50020
MB 140-49922/1-B	Method Blank	Total/NA	Air	537 (modified)	50020
LCS 140-49922/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	50020
LCSD 140-49922/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	50020

Cleanup Batch: 50096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-2	A-5983,5984,5986 VEN CARBON BED INLET R	Total/NA	Air	Dilution	50020
140-23116-6	A-5990,5991,5993 VEN CARBON BED INLET R2	Total/NA	Air	Dilution	50020

QC Association Summary

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

Job ID: 140-23116-1

LCMS

Analysis Batch: 50101

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-2	A-5983,5984,5986 VEN CARBON BED INLET R	Total/NA	Air	537 (modified)	50096
140-23116-6	A-5990,5991,5993 VEN CARBON BED INLET R	Total/NA	Air	537 (modified)	50096

Cleanup Batch: 50146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-10	A-5997,5998,6000 VEN CARBON BED INLET R	Total/NA	Air	Dilution	50020
140-23116-12	A-6001 VEN CARBON BED INLET R3 OTM-45 E	Total/NA	Air	Dilution	50020

Analysis Batch: 50148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23116-10	A-5997,5998,6000 VEN CARBON BED INLET R	Total/NA	Air	537 (modified)	50146
140-23116-12	A-6001 VEN CARBON BED INLET R3 OTM-45 E	Total/NA	Air	537 (modified)	50146

Client Sample ID: A-5981,5982 VEN CARBON BED INLET R1 OTM-45 FH

Lab Sample ID: 140-23116-1

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	90 mL	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Cleanup	Dilution			20 uL	10000 uL	50063	05/20/21 17:54	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 17:22	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: A-5983,5984,5986 VEN CARBON BED INLET R1 OTM-45 BH

Lab Sample ID: 140-23116-2

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Cleanup	Dilution			10 uL	10000 uL	50096	05/22/21 10:37	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50101	05/23/21 00:11	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: A-5985 VEN CARBON BED INLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23116-3

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		3			49989	05/19/21 12:01	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: A-5987 VEN CARBON BED INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23116-4

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		10			50095	05/22/21 13:59	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: A-5988,5989 VEN CARBON BED INLET R2 OTM-45 FH

Lab Sample ID: 140-23116-5

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	88 mL	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Cleanup	Dilution			20 uL	10000 uL	50063	05/20/21 17:54	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 17:32	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: A-5990,5991,5993 VEN CARBON BED INLET R2 OTM-45 BH

Lab Sample ID: 140-23116-6

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Cleanup	Dilution			10 uL	10000 uL	50096	05/22/21 10:37	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50101	05/23/21 00:20	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: A-5992 VEN CARBON BED INLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23116-7

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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			0.0069 Sample	10 mL	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 19:08	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: A-5994 VEN CARBON BED INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23116-8

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 14:25	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

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

Job ID: 140-23116-1

Client Sample ID: A-5995,5996 VEN CARBON BED INLET R3 OTM-45 FH

Lab Sample ID: 140-23116-9

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	116 mL	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Cleanup	Dilution			20 uL	10000 uL	50063	05/20/21 17:54	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 17:42	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: A-5997,5998,6000 VEN CARBON BED INLET R3 OTM-45 BH

Lab Sample ID: 140-23116-10

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Cleanup	Dilution			5 uL	10000 uL	50146	05/24/21 16:02	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50148	05/24/21 21:12	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: A-5999 VEN CARBON BED INLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-23116-11

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		10			49989	05/19/21 12:10	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: A-6001 VEN CARBON BED INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-23116-12

Date Collected: 05/17/21 00:00
Date Received: 05/18/21 05:00

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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	50146	05/24/21 16:02	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			50148	05/24/21 21:21	JRC	TAL KNX

Instrument ID: LCA

Lab Chronicle

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

Job ID: 140-23116-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49922/14-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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 14:16	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49922/1-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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 12:13	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49940/1-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	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 16:18	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-49946/1-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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 18:07	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49922/2-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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 12:22	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

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

Job ID: 140-23116-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49940/2-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	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 16:27	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-49946/2-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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 18:15	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49922/3-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	49922	05/18/21 09:16	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	50020	05/20/21 06:49	CLI	TAL KNX
Total/NA	Analysis	537 (modified)		1			50095	05/22/21 12:31	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49940/3-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	49940	05/18/21 12:47	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	49976	05/19/21 08:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			50089	05/21/21 16:36	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-49946/3-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	49946	05/18/21 13:49	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	49961	05/18/21 16:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			49964	05/18/21 18:24	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: 140-23116-1
Project/Site: VEN CB Inlet - OTM-45

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: VEN CB Inlet - OTM-45

Job ID: 140-23116-1

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: VEN CB Inlet - OTM-45

Job ID: 140-23116-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-23116-1	A-5981,5982 VEN CARBON BED INLET R1 OTM-45 FH	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-2	A-5983,5984,5986 VEN CARBON BED INLET R1 OTM-45 BH	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-3	A-5985 VEN CARBON BED INLET R1 OTM-45 IMPINGERS 1,2&3 COND	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-4	A-5987 VEN CARBON BED INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-5	A-5988,5989 VEN CARBON BED INLET R2 OTM-45 FH	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-6	A-5990,5991,5993 VEN CARBON BED INLET R2 OTM-45 BH	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-7	A-5992 VEN CARBON BED INLET R2 OTM-45 IMPINGERS 1,2&3 COND	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-8	A-5994 VEN CARBON BED INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-9	A-5995,5996 VEN CARBON BED INLET R3 OTM-45 FH	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-10	A-5997,5998,6000 VEN CARBON BED INLET R3 OTM-45 BH	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-11	A-5999 VEN CARBON BED INLET R3 OTM-45 IMPINGERS 1,2&3 COND	Air	05/17/21 00:00	05/18/21 05:00	
140-23116-12	A-6001 VEN CARBON BED INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	05/17/21 00:00	05/18/21 05:00	

Request for Analysis/Chain-of-Custody – RFA/COC #001
The Chemours Company – Fayetteville NC
VEN Carbon Bed Inlet

140-23116 Chain of Custody

Project Identification:	Chemours Emissions Test
Client Name:	Chemours Company
Client Contact:	Christel Compton (910) 678-1213
TestAmerica Contact:	Courtney Adkins (865) 291-3019
TestAmerica Project Manager:	Billy Anderson (865) 291-3080

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 Package Due Date:	28 Days from Lab Receipt

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

Project Deliverables:
Report analytical results on TALS Reports and in data packages. 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)	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
A-5981 VEN Carbon Bed Inlet R1 OTM-45 Particulate Filter (Combine with *A-5982*)	1	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA 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 Particulate Filter sample. Analyze for HFPO-DA using method 8321A-HFPO.
A-5982 VEN Carbon Bed Inlet R1 OTM-45 FH of Filter Holder & Probe Methanol Rinse (Combine with *A-5981*)	1	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-5983 VEN Carbon Bed Inlet R1 OTM-45 XAD-2 Resin Tube	1	5/17/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using method 8321A-HFPO.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-5984 VEN Carbon Bed Inlet R1 OTM-45 BH of Filter Holder & Coil Condenser Methanol Rinse (Combine with *A-5983*)	1	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction.
A-5985 VEN Carbon Bed Inlet R1 OTM-45 Impingers 1,2 & 3 Condensate	1	5/17/21		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Analyze the sample for HFPO-DA.
A-5986 VEN Carbon Bed Inlet R1 OTM-45 Impinger Glassware MeOH Rinse (Combine with *A-5983*)	1	5/17/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
A-5987 VEN Carbon Bed Inlet R1 OTM-45 Breakthrough XAD-2 Resin Tube	1	5/17/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using method 8321A-HFPO.
A-5988 VEN Carbon Bed Inlet R2 OTM-45 Particulate Filter (Combine with *A-5989*)	2	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA 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 Particulate Filter sample. Analyze for HFPO-DA using method 8321A-HFPO.
A-5989 VEN Carbon Bed Inlet R2 OTM-45 Front Half of Filter Holder & Probe Methanol Rinse (Combine with *A-5988*)	2	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate 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
A-5990 VEN Carbon Bed Inlet R2 OTM-45 XAD-2 Resin Tube	2	5/17/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using method 8321A-HFPO. Analyze.
A-5991 VEN Carbon Bed Inlet R2 OTM-45 BH of Filter Holder & Coil Condenser Methanol Rinse (Combine with *A-5990*)	2	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction.
A-5992 VEN Carbon Bed Inlet R2 OTM-45 Impingers 1,2 & 3 Condensate	2	5/21/21		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Analyze the sample for HFPO-DA.
A-5993 VEN Carbon Bed Inlet R2 OTM-45 Impinger Glassware MeOH Rinse (Combine with *A-5990*)	2	5/17/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
A-5994 VEN Carbon Bed Inlet R2 OTM-45 Breakthrough XAD-2 Resin Tube	2	5/17/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using method 8321A-HFPO.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-5995 VEN Carbon Bed Inlet R3 OTM-45 Particulate Filter (Combine with *A-5996*)	3	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** OTM-45 Train HFPO-DA 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 Particulate Filter sample. Analyze for HFPO-DA using method 8321A-HFPO.
A-5996 VEN Carbon Bed Inlet R3 OTM-45 Front Half of Filter Holder & Probe Methanol Rinse (Combine with *A-5995*)	3	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-5997 VEN Carbon Bed Inlet R3 OTM-45 XAD-2 Resin Tube	3	5/17/21		XAD-2 Resin Tube	**XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using method 8321A-HFPO.
A-5998 VEN Carbon Bed Inlet R3 OTM-45 BH of Filter Holder & Coil Condenser Methanol Rinse (Combine with *A-5997*)	3	5/17/21		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA using method 8321A-HFPO.
A-5999 VEN Carbon Bed Inlet R3 OTM-45 Impingers 1,2 & 3 Condensate	3	5/17/21		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Analyze the sample for HFPO-DA.
A-6000 VEN Carbon Bed Inlet R3 OTM-45 Impinger Glassware MeOH Rinse (Combine with *A-5997*)	3	5/17/21		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** OTM-45 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6001 VEN Carbon Bed Inlet R3 OTM-45 Breakthrough XAD-2 Resin Tube	3	5/17/21		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** OTM-45 Train HFPO-DA 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 using method 8321A-HFPO.

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 0.8 / CT 0.9°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 Sharpe	Alliance	5/17/21 1805
Accepted By:	Doug Gehl	ETA KNOX	5/17/21 1805
Relinquished By:	Doug Gehl	ETA KNOX	5/18/21 0130
Accepted By:	Ryan Hanson	ETA KNOX	5-18-21 05:00
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 : 5C71 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: Ryan Cannon Date: 5-18-21

QA026R32.doc, 062719

Appendix D

QA/QC Data

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

Date	Nozzle ID	Nozzle Diameter (in.) #1	#2	#3	Dn (Average)	Difference	Criteria	Material
5/7/21	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?
5/7/21	P4-1	no	no	no

Date	Meter Box ID	Positive Pressure Leak Check
5/7/21	3	Pass

QA/QC Data

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

Date	Nozzle ID	Nozzle Diameter (in.) #1	#2	#3	Dn (Average)	Difference	Criteria	Material
5/7/21	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?
5/7/21	P4-3	no	no	no

Date	Meter Box ID	Positive Pressure Leak Check
5/7/21	5	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:	2/10/2021	METER SERIAL #:	MB3	BAROMETRIC PRESSURE (in Hg):	INITIAL 30.38	FINAL 30.38	AVG (P_{bar}) 30.38
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	24	889.290	895.162	5.872	57	60	61	60	60	60.25	15.00	0.44	6.0587	6.1346	1.013			1.53
	2	0.306																		
	3	0.306																		
																AVG =	1.013	1.06	1.35	
16	1	0.4268	22.5	895.162	900.693	5.531	58	61	62	60	61	61	10.00	0.86	5.7045	5.6987	0.999			1.54
	2	0.4268																		
	3	0.4268																		
																AVG =	0.999	-0.29	-0.20	
18	1	0.4961	21.5	900.693	907.113	6.420	58	62	63	61	61	61.75	10.00	1.2	6.6172	6.6240	1.001			1.59
	2	0.4961																		
	3	0.4961																		
																AVG =	1.001	-0.09	0.47	
26	1	0.7131	19	907.113	916.371	9.258	58	63	65	61	62	62.75	10.00	2.6	9.5563	9.5215	0.996			1.67
	2	0.7131																		
	3	0.7131																		
																AVG =	0.996	-0.56	-0.43	
31	1	0.8358	17.5	916.371	927.180	10.809	58	65	67	62	63	64.25	10.00	3.6	11.1521	11.1598	1.001			1.68
	2	0.8358																		
	3	0.8358																		
																AVG =	1.001	-0.12	0.44	

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 = 1.002

AVERAGE $DH_@$ = 1.60

(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.

					INITIAL	FINAL	AVG (P_{bar})
DATE:	1/11/2021	METER SERIAL #:	MB 5	BAROMETRIC PRESSURE (in Hg):	29.92	29.92	29.92
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	23.5	606.287	614.284	7.997	64	65	66	67	66	66	20.00	0.51	8.0390	8.0016	0.995			1.80
	2	0.306																		
	3	0.306																		
																AVG =	0.995	0.43	0.82	
16	1	0.4268	22	614.297	619.908	5.611	65	66	67	66	66	66.25	10.00	1.05	5.6453	5.5749	0.988			1.91
	2	0.4268																		
	3	0.4268																		
																AVG =	0.988	-0.36	0.02	
18	1	0.4961	21	619.923	626.441	6.518	66	67	68	66	66	66.75	10.00	1.4	6.5572	6.4739	0.987			1.89
	2	0.4961																		
	3	0.4961																		
																AVG =	0.987	-0.38	-0.02	
26	1	0.7131	19	626.447	635.794	9.347	66	68	72	67	67	68.5	10.00	2.9	9.4065	9.3057	0.989			1.90
	2	0.7131																		
	3	0.7131																		
																AVG =	0.989	-0.18	0.20	
31	1	0.8358	17.5	635.813	646.695	10.882	67	71	74	68	69	70.5	10.00	4	10.9392	10.8965	0.996			1.90
	2	0.8358																		
	3	0.8358																		
																AVG =	0.996	0.50	0.89	

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 = 0.991

AVERAGE $DH_@$ = 1.88

(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

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

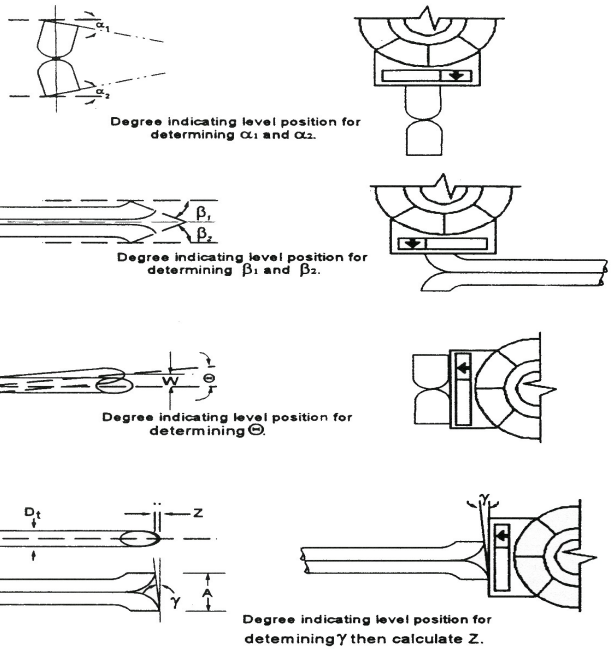
Initial Sample Probe Calibration Form

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

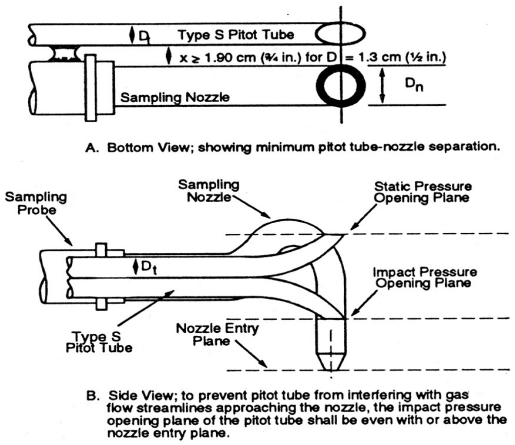
"S" Type Pitot Calibration

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

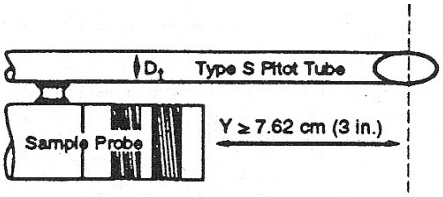


Verification of "S" Type Pitot, Thermocouple and Nozzle Placement



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

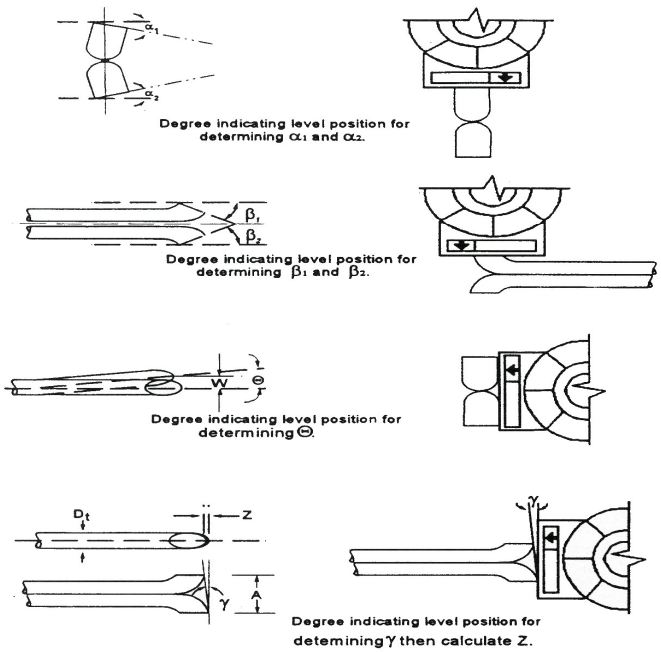
Initial Sample Probe Calibration Form

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

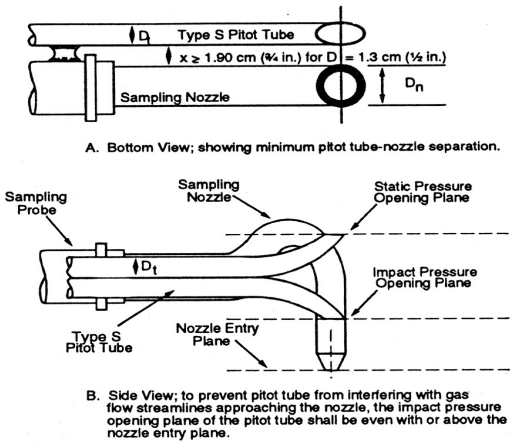
"S" Type Pitot Calibration

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

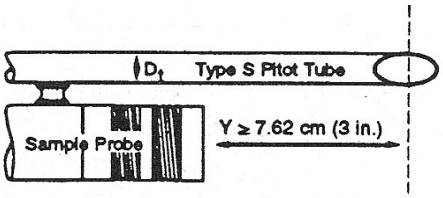


Verification of "S" Type Pitot, Thermocouple and Nozzle Placement



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

					INITIAL	FINAL	AVG (P_{bar})
DATE:	05/26/21	METER BOX #:	3	BAROMETRIC PRESSURE (in Hg):	29.75	29.75	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	22	810.245	816.694	6.449	71	73	73	73	73	73	10.00	1.2	6.3722	6.4067	1.005	-0.06	1.62
	2	0.4961	22	816.694	823.127	6.433	72	73	73	73	73	73	10.00	1.2	6.3564	6.4007	1.007	0.10	1.63
	3	0.4961	22	823.127	829.575	6.448	72	73	74	73	74	73.5	10.00	1.2	6.3652	6.4007	1.006	-0.04	1.63
																AVG =	1.006		
	1																		
	2																		
	3																		
																AVG =			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.006

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 1.002

PERCENT DIFFERENCE = 0.4

POST TEST DRY GAS METER CALIBRATION

DATE:	05/26/21	METER BOX #:	5	BAROMETRIC PRESSURE (in Hg):	INITIAL 29.88	FINAL 29.88	AVG (P_{bar}) 29.88
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	82.544	89.090	6.546	75	73	75	72	73	73.25	10.00	1.4	6.4964	6.4106	0.987	0.12	1.90
	2	0.4961	21.5	89.090	95.669	6.579	77	75	77	73	75	75	10.00	1.4	6.5077	6.3986	0.983	-0.24	1.90
	3	0.4961	21.5	95.669	104.206	8.537	78	76	79	75	76	76.5	13.00	1.4	8.4209	8.3105	0.987	0.13	1.90
																AVG =	0.986		
	1																		
	2																		
	3																		
																AVG =			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.986

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 0.991

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

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

Appendix E

Viny Ethers North Operations Data

Date	**05/17/21**																																	
Time	900				1000				1100				1200				1300				1400				1400				1500				1600			
Stack Testing					RUN 1: 9:55-11:57										RUN 2: 12:30-14:24												RUN 3: 14:54-16:54							
VEN Product	PPVE																																	
VEN Precursor																																		
VEN Condensation (HFPO)	230 kg/hr																																	
VEN ABR					105 kg/hr																													
VEN Refining																																		
Stripper Column Vent																																		

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