

Intended for
The Chemours Company – Fayetteville, North Carolina

Document type
Report

Date
October 2020

SOURCE EMISSIONS TESTING OF THE VINYL ETHERS NORTH CARBON BED

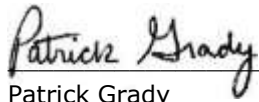
SOURCE EMISSIONS TESTING OF THE VINYL ETHERS NORTH CARBON BED

Project name **PFAS Emissions Testing**
Project no. **1088211/1940100086**
Recipient **Christel Compton**
Document type **Report**
Version **1**
Date **October 19, 2020**
Prepared by **Patrick Grady, Project Associate**
Checked by **David Ostaszewski, PE, Senior Managing Engineer**

Ramboll
7600 Morgan Road
Liverpool, NY 13090
USA

T 315-637-2234
F 315-637-2819
<https://ramboll.com>

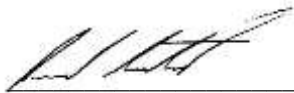
This report has been reviewed and to the best of our knowledge the report is complete, and the results presented herein are accurate, error free, legible, and representative of the actual emissions measured during testing.



Patrick Grady
Project Associate
Ramboll

Ramboll
7600 Morgan Road
Liverpool, NY 13090
USA

T 315-637-2234
F 315-637-2819
<https://ramboll.com>



David Ostaszewski, PE
Senior Managing Engineer
Ramboll

CONTENTS

1.	Introduction and Background	3
1.1	Testing Objective	3
1.2	Emissions Testing Program Participants	3
2.	Process Description	5
2.1	Process Description	5
2.2	Operating Conditions During Testing	5
3.	Summary of Test Program	6
3.1	Test Program Summary	6
4.	Sampling and Analytical Procedures	7
4.1	Test Methods	7
4.2	Sampling Locations	7
4.3	Gas Velocity and Volumetric Flow Rate	8
4.4	Oxygen and Carbon Dioxide Concentrations	8
4.5	Moisture Content	8
4.6	HFPO-DA Emissions	8
4.6.1	HFPO-DA Sample Train and Equipment Preparation	9
4.6.2	HFPO-DA Sample Train Recovery	9
5.	Emissions Test Results	10
5.1	Emission Test Results	10
5.2	Discussion and Conclusion	10
6.	Quality Assurance/Quality Control	11
6.1	Equipment Calibration	11
6.2	Equipment Leak Checks	11
6.3	Reagent Blanks and Field Blanks	12
6.4	Test Data and Report Review	12

LIST OF TABLES

1. Summary of Emission Test Results

LIST OF APPENDICES

- A. Process Operating Data
- B. Schematic of the Test Locations
- C. Field Data and Calculations
- D. Laboratory Data
- E. Equipment Calibration Data

1. INTRODUCTION AND BACKGROUND

Ramboll Americas Engineering Solutions, Inc. (Ramboll) was retained by The Chemours Company (Chemours) to conduct source emissions testing at its facility located in Fayetteville, North Carolina. Ramboll has prepared the following test report summarizing the results of the testing on behalf of Chemours.

1.1 Testing Objective

As provided in their Title V Air Permit, Chemours is required to evaluate hexafluoro-propylene oxide-dimer acid (HFPO-DA) emissions from a carbon bed adsorber at the Fayetteville Works facility. The objective of this test program was to collect field sample data from the inlet and outlet to the carbon bed serving the Vinyl Ethers North (VEN) process area to determine carbon bed replacement frequency.

The source emissions test program was performed on September 3, 2020. Messrs. Patrick Grady, Jeff Sheldon, Antonio Anderson, Brian Goodhile and Eric Alongi of Ramboll conducted the emissions testing. Ms. Christel Compton and Mr. Edward Vega coordinated process operations with the emissions testing. There were no representatives from any of the regulatory agencies present to observe the field test program.

This report presents a description of the sources tested, a summary of the scope of work conducted, sampling methods used, QA/QC procedures, and emission test results. The following section lists the testing program's participants and their contact information.

1.2 Emissions Testing Program Participants

Facility

Name:	The Chemours Company
Site Address:	22828 Hwy 87 W Fayetteville, NC 28306
Contact:	Christel E. Compton
e-mail:	christel.e.compton@chemours.com

Source Testing Firm

Name: Ramboll
Address: 7600 Morgan Road
Liverpool, NY 13090
Contact: Patrick Grady
e-mail: Patrick.grady@ramboll.com

Sample Analysis Laboratory

Name: Eurofins TestAmerica, Knoxville
Address: 5815 Middlebrook Pike
Knoxville, Tennessee 37921
Contact: Courtney Adkins
e-mail: courtney.adkins@testamericainc.com

2. PROCESS DESCRIPTION

This section provides a description of the VEN process.

2.1 Process Description

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.

2.2 Operating Conditions During Testing

Source emissions testing was performed during normal operations of the VEN process. Facility personnel monitored and recorded process operations during the testing. Copies of the operating data were provided to Ramboll and are included in Appendix A of this report.

3. SUMMARY OF TEST PROGRAM

This section provides a summary of the testing scope of work conducted. Test methods used during the sampling program can be found in Section 4 of this report.

3.1 Test Program Summary

Emissions testing was conducted simultaneously at the inlet and outlet of the VEN carbon bed and the Division Stack serving VEN in order to evaluate potential emissions and removal efficiencies of HFPO-DA. The testing at each location was conducted in triplicate and each test run was 96 minutes in duration. Results of the source emission testing are reported in units of milligrams per dry standard cubic meter (mg/dscm) and pounds per hour (lb/hr).

4. SAMPLING AND ANALYTICAL PROCEDURES

This section provides a description of the test methods that were utilized during the test program.

4.1 Test Methods

The test procedures were conducted in accordance with the most recent updates to the United States Environmental Protection Agency (USEPA) Reference Methods (RM) described in 40 CFR 60; Appendix A.

RM 1:	Sample and velocity traverses for stationary sources
RM 2:	Determination of stack gas velocity and volumetric flow rate (Type S pitot tube)
RM 3:	Determination of oxygen and carbon dioxide concentrations in emissions from stationary sources
RM 4:	Determination of moisture content in stationary sources
Modified 0010:	Determination of PFAS emissions from stationary sources (modified)

4.2 Sampling Locations

The sampling ports at the 36-inch inside diameter (ID) carbon bed inlet duct are located approximately 67 inches (1.9 diameters) downstream of a bend and approximately 61 inches (1.7 diameters) upstream of another bend. Test ports in the 36-inch ID carbon bed outlet duct are located approximately 58 inches (1.6 diameters) downstream of a bend and approximately 57 inches (1.6 diameters) upstream from another bend. A total of 12 traverse points were sampled on each diameter during each test run for a total of 24 traverse points at each test location. Traverse points were located in accordance with USEPA RM 1.

Test ports in the 34-inch ID Division Stack are located approximately 30 feet downstream (11 diameters) of a disturbance and approximately 9 feet (3.2 diameters) from the stack exit. In accordance with USEPA RM 1, 6 traverse points were sampled on each diameter. Note that due to limited access to one of the test ports sampling was only conducted on one diameter for each test run at the Division Stack. Also, note that this test location is not part of the required quarterly testing.

Schematics of the sample locations along with traverse point locations are provided in Appendix A.

4.3 Gas Velocity and Volumetric Flow Rate

Velocity was evaluated from differential pressure measurements using a stainless-steel Type-S pitot tube and oil manometer in accordance with USEPA RMs 1 and 2. These methods were conducted in conjunction with each test run. Exhaust gas volumetric flow rate in units of dry standard cubic feet per minute (dscfm) were derived from velocity, temperature, molecular weight, and moisture measurements. Compound mass emission rates (lb/hr) were calculated using these volumetric flow rate data and compound concentrations.

4.4 Oxygen and Carbon Dioxide Concentrations

Concentrations of oxygen (O₂) and carbon dioxide (CO₂) were evaluated at both locations in accordance with modified USEPA RM 3 procedures using a Fyrite[®] combustion analyzer. A grab sample was collected and introduced into the Fyrite[®] for O₂ and CO₂ analysis.

4.5 Moisture Content

The moisture content of the sample trains was quantified utilizing procedures identified in USEPA RM 4. A sample of gas was continuously collected from each traverse point using a dry gas meter stack sampling system along with a series of impingers. The moisture content of the gas was measured as a change in the volume of the water collected in each impinger solution and the increased weight of the desiccant during the sampling period.

4.6 HFPO-DA Emissions

HFPO-DA emissions were evaluated in accordance with a modified USEPA Method 0010. The sample train consisted of a stainless-steel 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.

4.6.1 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. H₂O.
3. Bake glassware (with the exception of probe liners) at 450°C for approximately 2 hours, (XAD-2 resin tube glassware will be 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% NH₄OH) solvent contents. Squirt bottles will be labelled with the solvent content it contains.

4.6.2 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% NH₄OH 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% NH₄OH 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% NH₄OH 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% NH₄OH 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).

5. EMISSIONS TEST RESULTS

A detailed summary of the test results is presented in Table 1 in the appendix. Supporting field data and calculations can be found in Appendix C. The laboratory report is presented in Appendix D. A brief discussion of the test results is presented below.

5.1 Emission Test Results

Table 1 presents a detailed summary of the HFPO-DA test results. HFPO-DA concentrations at the carbon bed inlet ranged from 2.59E-02 mg/dscm to 2.27E-01 mg/dscm and averaged 1.08E-01 mg/dscm. Corresponding mass emissions of HFPO-DA ranged from 1.57E-03 lb/hr to 1.37E-02 lb/hr and averaged 7.24E-03 lb/hr.

Concentrations of HFPO-DA at the carbon bed outlet ranged from 3.28E-02 mg/dscm to 5.89E-02 mg/dscm and averaged 4.23E-02 mg/dscm. Mass emission rates of HFPO-DA from the carbon bed outlet ranged from 2.11E-03 lb/hr to 3.75E-03 lb/hr and averaged 2.71E-03 lb/hr. The resulting HFPO-DA removal efficiency of the VEN carbon bed averaged 63 percent.

A review of Table 1 indicates that HFPO-DA emissions at the carbon bed inlet were significantly lower during Runs 1 and 3. It should be noted that HFPO-DA emissions for Run 1 from the carbon bed outlet were similar to the carbon bed inlet (1.57E-03 lb/hr at the inlet vs. 2.11E-03 lb/hr at the outlet). There were no sampling issues or leak check problems of the sampling trains during any of the test runs. The decreased removal efficiency from the carbon bed during Run 1 and 3 can be attributed to the lower fugitive emissions during these test runs.

5.2 Discussion and Conclusion

There were no sampling or process operating problems encountered during the field testing that impacted the test results. Therefore, all test data are believed to be representative of actual emissions in evidence during the test program.

6. QUALITY ASSURANCE/QUALITY CONTROL

QA/QC was based on the recommended QA/QC procedures of the various sampling and analytical methods that were used for the test program. This section summarizes the pertinent QA/QC procedures that were employed during the emissions testing program.

6.1 Equipment Calibration

An important aspect of pre-sampling preparations is the inspection and calibration of all equipment planned to be used for the field effort. Equipment is inspected for proper operation and durability prior to calibration. Calibration of equipment is conducted in accordance with the procedures outlined in the USEPA document entitled "Quality Assurance Handbook for Air Pollution Measurement Systems; Volume III—Stationary Source Specific Methods" (EPA-600/4-77-027b). Equipment calibration is performed in accordance with USEPA guidelines and/or manufacturer's recommendations. Examples of the typical calibration requirements of the field equipment being used are as follows:

- Pitot tubes (QA Handbook Section 3.1.2, pp. 1-13) - measured for appropriate spacing and dimensions or calibrate in a wind tunnel. Rejection criteria given on the calibration sheet. Post-test check - inspect for damage.
- Probe nozzles (QA Handbook Section 3.4.2, pg. 19) - make three measurements of the nozzle ID (to the nearest 0.001 in.) using different diameters with a micrometer. Difference between the high and low values should not exceed 0.004 in. Post-test check - inspect for damage.
- Thermocouples (QA Handbook Section 3.4.2, pp. 15-18) - verify against a mercury-in-glass thermometer at two or more points including the anticipated measurement range. Acceptance limits - impinger $\pm 2^{\circ}\text{F}$; DGM $\pm 5.4^{\circ}\text{F}$; stack ± 1.5 percent of stack temperature.
- Dry gas meters (QA Handbook Section 3.4.2, pp. 1-12) - Dry gas meters are calibrated using critical orifices. The procedure entails four runs using four separate critical orifices running at an actual vacuum 1-2 in. greater than the theoretical critical vacuum. The minimum sample volume required per orifice is 5 ft³. Meter boxes are calibrated annually and then verified by use of the alternative USEPA RM 5 post-test calibration procedure. This procedure is referenced as Approved Alternate Method ALT-009 (June 21, 1994) by USEPA's Emission Measurement Center. The average Y-value obtained by this method must be within 5% of the initial Y-value.

6.2 Equipment Leak Checks

Pitot tube leak checks were conducted in accordance with USEPA RM 2. Leak checks were conducted on the HFPO-DA sample trains prior to and following each test run in accordance with the procedures outlined in USEPA RM 5, Sections 8.4.1 and 8.4.2.

6.3 Reagent Blanks and Field Blanks

A field blank for the Modified USEPA RM 0010 sample train was collected as part of the test program. The blank train was assembled and set-up near one of the carbon bed outlet test locations and as close to the outlet sample train as possible. The blank train remained in place for the duration of the sampling run. The blank train was heated to the same temperature as used for the outlet sampling train, and the impinger portion of the train was iced down and chilled water circulated through the coil condenser as described in SW-846 Method 0010. The blank train was recovered in the same location, and by the same procedures as the actual sampling trains.

Additionally, a proof blank train rinse sample was collected one time during the sampling campaign. The glassware components of the train received a thorough solvent rinse after samples were recovered and put away for a sampling run. This secondary rinse was used to prove that the sampling breakdown collection processes capture all HFPO-DA material, and generally leave none of the target analytes uncaptured on the sample glassware. All sampling train glassware parts, including brushes and other tools used, were thoroughly rinsed with MeOH / 5% NH₄OH solution to evaluate the general rinsing efficiency of the sampling train recovery process.

Reagent blanks of the diH₂O used in the sample trains and MeOH/5% NH₄OH solution used for sample recovery were also submitted to the laboratory for analysis along with the field samples. Note that the field blank train and proof blank were collected during sampling of the Vinyl Ethers South carbon bed. Results of the field blank, proof blank and reagent blanks and are included with the laboratory reports in Appendix D.

6.4 Test Data and Report Review

Test data input and emission calculations were double-checked for accuracy. The test results were reviewed by senior personnel for reasonableness and accuracy. The final report was peer reviewed by senior personnel and certified by the project manager.

TABLES

Table 1
The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed
Fayetteville, North Carolina

Run Identification	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average
Source ID:	<u>Carbon Bed Inlet</u>				<u>Carbon Bed Outlet</u>			
Run Date	03Sep20	03Sep20	03Sep20		03Sep20	03Sep20	03Sep20	
Start/Stop Time	1100-1255	1337-1529	1616-1805		1100-1255	1337-1529	1616-1805	
<u>Exhaust Gas Conditions</u>								
Temperature (deg. F)	97	101	104	101	95	97	103	98
Moisture (volume %)	1.9	1.7	2.4	2.0	2.4	2.2	1.7	2.1
Oxygen (dry volume %)	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.90
Carbon Dioxide (dry volume %)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
<u>Volumetric Flow Rate</u>								
acfm	17,683	17,759	17,762	17,735	18,384	18,237	18,424	18,348
dscfm	16,161	16,141	15,967	16,090	17,195	17,002	17,119	17,105
<u>HFPO - Dimer Acid</u>								
mg/dscm	2.59E-02	2.27E-01	1.08E-01	1.20E-01	3.28E-02	5.89E-02	3.53E-02	4.23E-02
lb/hr	1.57E-03	1.37E-02	6.47E-03	7.24E-03	2.11E-03	3.75E-03	2.27E-03	2.71E-03
<u>Carbon Bed Removal Efficiency</u>								
percent	NA	73	65	63				

APPENDIX A PROCESS OPERATING DATA

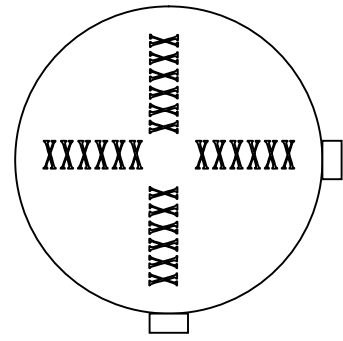
Date

Time	1300			1400			1500			
Stack Testing			RUN 2: 1337-1529							
VEN Product	[Green shaded area]									
VEN Precursor	[Green shaded area]									
VEN Condensation (HFPO)	[Green shaded area]									
VEN ABR										
VEN Refining										
Stripper Column Vent	[Green shaded area]									

Date

Time	1600	1700	1800
Stack Testing	RUN 3:1616-1805		
VEN Product			
VEN Precursor			
VEN Condensation (HFPO)			
VEN ABR			
VEN Refining			
Stripper Column Vent			

APPENDIX B SCHEMATICS OF THE TEST LOCATIONS



Crosssectional Area Showing Velocity Traverse Point Locations

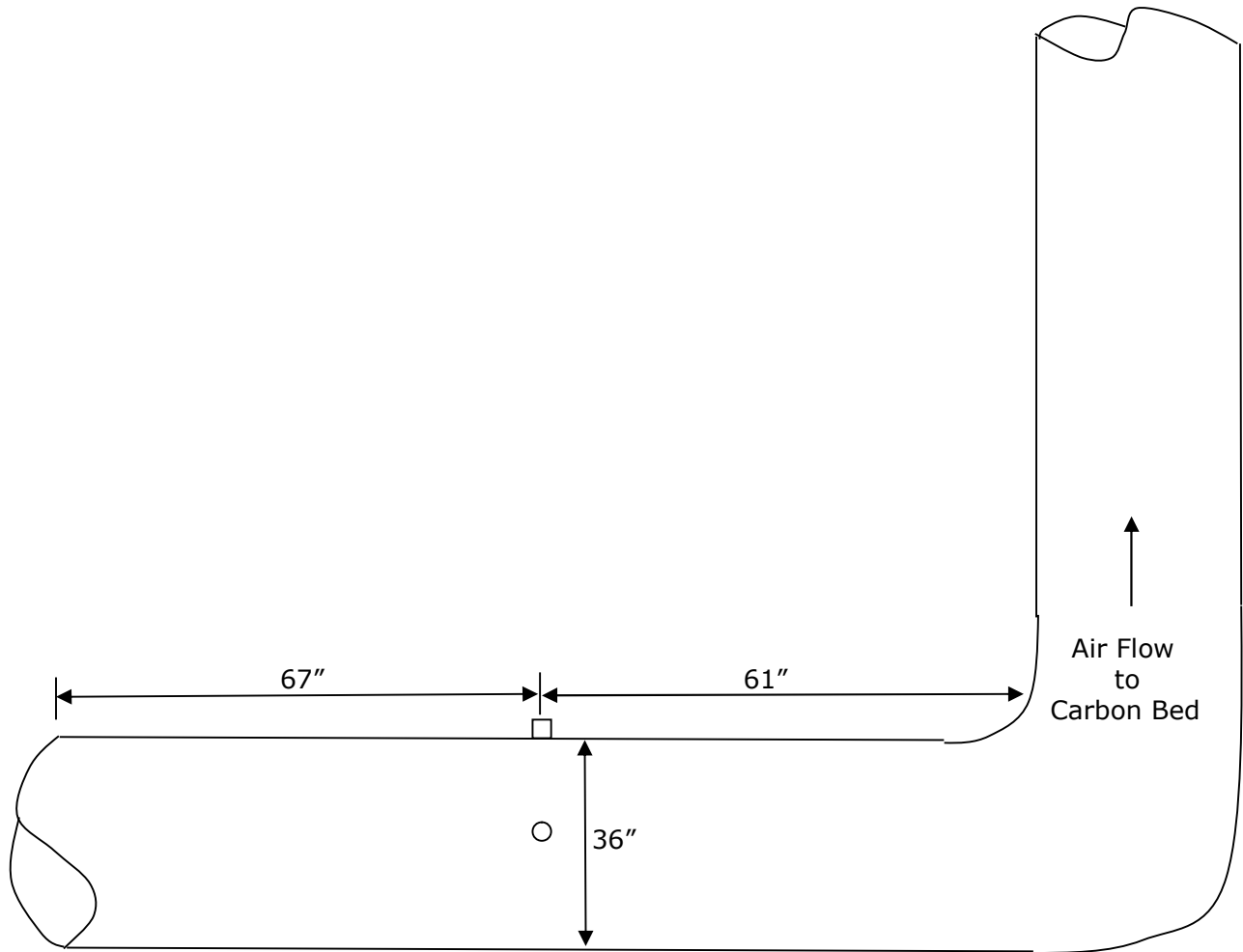


Figure 1
Carbon Bed Inlet Sampling Location
Vinyl Ethers North
The Chemours Company
Fayetteville, North Carolina

Sample Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: VEN Carbon Bed Inlet

Stack Diameter: 36 inches

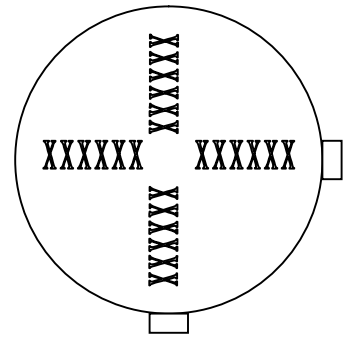
Sampling Locations: 1.9 diameters downstream
1.7 diameters upstream

Minimum Number of Traverse points
as specified by EPA Method 1: 24

Number of traverse points sampled: 24

Traverse Point Number	Percent of Stack Diameter From Inside Wall	Distance in Inches From Inside Wall*
1	2.1	1.0
2	6.7	2.4
3	11.8	4.2
4	17.7	6.4
5	25.0	9.0
6	35.6	12.8
7	64.4	23.2
8	75.0	27.0
9	82.3	29.6
10	88.2	31.8
11	93.3	33.6
12	97.9	35.0

*Traverse points located within 1.00" to the stack wall for stacks having an inside diameter greater than 24" will be relocated as well as traverse points located within 0.50 inches to the stack wall on stacks with a 24" ID or less to meet criteria.



Crosssectional Area Showing
Velocity Traverse Point Locations

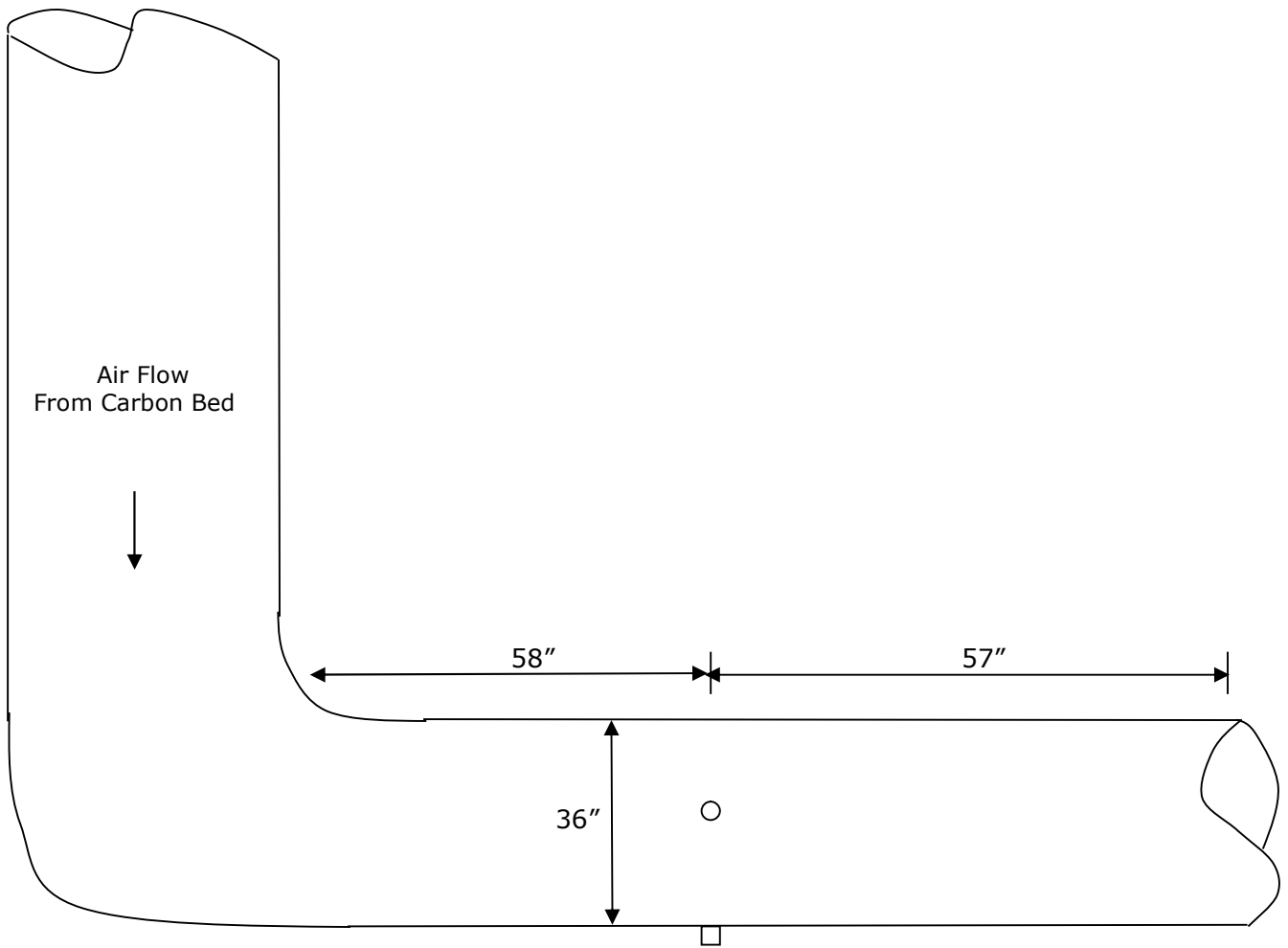


Figure 2
Carbon Bed Outlet Sampling Location
Vinyl Ethers North
The Chemours Company
Fayetteville, North Carolina

Sample Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: VEN Carbon Bed Outlet

Stack Diameter: 36 inches

Sampling Locations: 1.6 diameters downstream
1.6 diameters upstream

Minimum Number of Traverse points
as specified by EPA Method 1: 24

Number of traverse points sampled: 24

Traverse Point Number	Percent of Stack Diameter From Inside Wall	Distance in Inches From Inside Wall*
1	2.1	1.0
2	6.7	2.4
3	11.8	4.2
4	17.7	6.4
5	25.0	9.0
6	35.6	12.8
7	64.4	23.2
8	75.0	27.0
9	82.3	29.6
10	88.2	31.8
11	93.3	33.6
12	97.9	35.0

*Traverse points located within 1.00" to the stack wall for stacks having an inside diameter greater than 24" will be relocated as well as traverse points located within 0.50 inches to the stack wall on stacks with a 24" ID or less to meet criteria.

APPENDIX C FIELD DATA AND CALCULATIONS

VEN Carbon Bed Inlet Field Test Data

Test Data Summary and Calculations
The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Inlet
Fayetteville, North Carolina

<u>Parameter</u>	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
Run Date	9/3/20	9/3/20	9/3/20
Start/Stop Time	1100-1255	1337-1529	1616-1805
Duration of Run, Minutes	96	96	96
Ave. Nozzle Diameter, inches	0.245	0.245	0.245
Pitot Calibration Factor, CF	0.84	0.84	0.84
Meter Gamma	0.975	0.975	0.975
Meter Delta H, inches of H2O	1.56	1.56	1.56
Stack Diameter, inches	36	36	36
Rectangular Width, inches	0	0	0
Rectangular Length, inches	0	0	0
Stack Area, sq.ft.	7.07	7.07	7.07
Barometric Pressure, inches of Hg	29.92	29.92	29.92
Static Pressure, inches of H2O	-6.8	-6.8	-6.8
<u>Dry Gas Meter Sample Volume. (VM)ft³</u>			
Initial	500.791	578.258	658.042
Final	577.861	656.805	735.101
Total Volume	76.922	77.981	76.904
Ave. Stack Temperature, Ts(F)	97.4	101.4	103.8
Ave. Meter Temperature, Tm(F)	103.4	105.9	107.3
Ave. Run Delta H, inches of H2O	1.70	1.71	1.70
Ave. Square Root of Delta P	0.7138	0.7145	0.7122
<u>Moisture Data</u>			
Volume of water collected, mls	12.4	10.4	17.4
Silica Gel, grams	16.4	16	18.8
Total Collected, mls	28.8	26.4	36.2
<u>ORSAT Data</u>			
%O2	20.90	20.90	20.90
%CO2	0.0	0.0	0.0
%CO			

Calculations

Vw(std), scf =	1.356	1.243	1.704
Vm(std), dscf =	70.585	71.233	70.081
Bws =	0.019	0.017	0.024
Md =	28.84	28.84	28.84
Ms =	28.63	28.65	28.58
Vs, ft/sec =	41.7	41.9	41.9
Qs, acfm =	17,683	17,759	17,762
Qs(std), dscfm =	16,161	16,141	15,967
Isokinetic Sampling Rate, %	98.2	99.3	98.7

Where:

An = area of the nozzle

As = area of the stack

Vw(std) = volume of water vapor in gas, standard conditions = $0.04707 \cdot Vlc$

Vm(std) = vol. of gas sampled, standard conditions = $17.647 \cdot Vm \cdot \gamma \cdot [Pb + (dH/13.6)] / Tm(R)$

Bws = water vapor in gas stream, proportion by volume = $Vw(std) / (Vm(std) + Vw(std))$

Md = molecular weight of stack gas, dry basis = $(0.44 \cdot \%CO_2) + (0.32 \cdot \%O_2) + [0.28 \cdot (\%N_2 + \%CO)]$

Ms = molecular weight of stack gas, wet basis = $[Md \cdot (1-Bws)] + (18.0 \cdot Bws)$

Vs = stack gas velocity = $85.49 \cdot Cp \cdot (\text{avg. Sq.Rt. } dP) \cdot [Sq.Rt. (Ts(R)) / (Ms \cdot Ps)]$

Qs = stack gas flow rate = $Vs \cdot As \cdot 60$

Qs(std) = stack gas flow rate, standard conditions = $Qs \cdot (1-Bws) \cdot (528 / (Ts(R))) \cdot (Ps / 29.92)$

Isokinetic sampling rate = $\{ (Ts(R)) \cdot [(0.00267 \cdot Vlc) + (Vm(std) / 17.647)] \cdot 100 / (\text{Time} \cdot vs \cdot Ps \cdot An \cdot x60) \}$

Results Summary
The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Inlet
Fayetteville, North Carolina

<u>Parameter:</u> _____	<u>Run 1</u>					<u>Run 2</u>				<u>Run 3</u>				<u>Average</u>			
	Mol. Wt.	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr
HFPO - Dimer Acid	330	0.05182	2.59E-02	1.89E-03	1.57E-03	0.45691	2.27E-01	1.65E-02	1.37E-02	0.21466	1.08E-01	7.88E-03	6.47E-03	0.24	1.20E-01	8.76E-03	7.24E-03

Where:

Pollutant Emission Concentration:

mg = total sample collected, milligrams

mg/dscm = milligrams of pollutant per dry standard cubic meter sampled = (mg/dscf) x (35.314 cubic feet/cubic meter)

ppm = parts per million = ((mg/dscm x 24.04 liters/mol)/mol.wt)

Pollutant Emission Rate:

lb/hr = pounds of pollutant emitted per hour = mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr

Example Calculations

The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Inlet
Fayetteville, North Carolina

Note: Values are shown for example purposes only.

Vm,a = Dry gas volume at actual conditions (acf)

Initial gas meter volume: 500.791
Final gas meter volume: 577.861
Difference: 77.070

Vm,std = Volume of dry gas at standard conditions (dscf)

= $17.647 \times Vm, a \times \text{Gamma} \times [\text{Pbar} + (\text{DeltaH}/13.6)] / \text{Tm}(\text{R})$
= $17.647 \times 77.070 \times 0.975 \times (29.92 + [(1.560 / 13.6) / 563]$
= 70.585

VI,c = Volume of water collected in impingers and silica gel (ml)

impinger catch (mls): 12
silica gel (g) 16.4
total: 28.8

Vw,std = Volume of water vapor in gas at standard conditions (cu.ft.)

= $(0.04707) \times (VI,c)$
= 0.04707×28.8
= 1.356

Bwo = Proportion by volume of water vapor in gas stream

= $Vw,std / (Vw,std + Vm,std)$
= $1.36 / (1.36 + 70.585)$
= 0.019

Ps = Stack gas static pressure (in. Hg)

= $St / 13.6$
= $-6.80 / 13.6$
= -0.500

Pa = Absolute stack gas pressure (in. Hg)

= $Ps + \text{Pbar}$
= $-0.500 + 29.92$
= 29.42

MFD = Dry mole fraction of stack gas

= $1 - Bwo$
= $1 - 0.019$
= 0.981

Md = Dry molecular weight of stack gas (lb/lb-mol)

= $(0.32 \times \%O_2) + (0.44 \times \%CO_2) + (0.28 \times \%N_2)$
= $(0.32 \times 20.90) + (0.44 \times 0.00) + (0.28 \times 79.10)$
= 28.84

Mw = Wet molecular weight of stack gas (lb/lb-mol)

= $(Md) \times (MFD) + (0.18) \times (Bwo \times 100)$
= $28.84 \times 0.981 + 0.18 \times 1.88434$
= 28.63

Example Calculations

The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Inlet
Fayetteville, North Carolina

Note: Values are shown for example purposes only.

Vs,avg = Average stack gas velocity (fps)

$$\begin{aligned} &= K_p \times (C_p) \times (\text{sqrt, delta P}) \times \text{sqrt}((T_s + 460^\circ\text{R})/\text{Mw} \times \text{Pa}) \\ &= 85.48 \times 0.84 \times 0.71 \times \text{sqrt}(\quad \quad \quad) \\ &= 41.7 \end{aligned}$$

A Cross sectional areas of stack (sq. ft)

$$\begin{aligned} &= \pi/4 \times d^2 \\ &= 3.14159/4 \times 3.00^2 \\ &= 7.07 \end{aligned}$$

Qa Volumetric flow rate at actual conditions (acfm)

$$\begin{aligned} &= (60)\text{sec}/\text{min} \times (A) \times (V_s, \text{avg}) \\ &= 60 \times 7.0686 \times 41.69 \\ &= 17,681 \end{aligned}$$

Qstd Volumetric flow rate at standard conditions (scfm)

$$\begin{aligned} &= Q_a \times (528/T_{s, \text{avg}} + 460) \times P_a/29.92 \\ &= 17,681 \times (528 / 557) \times 0.983 \\ &= 16,470 \end{aligned}$$

Qstd,dry Volumetric flow rate at dry standard conditions per minute(dscfm)

$$\begin{aligned} &= Q_{\text{std}} \times (1 - B_{\text{wo}}) \\ &= 16,470 \times 0.9812 \\ &= 16,159 \end{aligned}$$

mg/dscm HFPO-DA concentration

$$\begin{aligned} &= (\text{mg}/\text{dscf}) \times 35.314 \text{ cu. ft.}/\text{cu. meter} \\ &= (0.05 / 70.59) \times 35.314 \\ &= 2.59\text{E-}02 \end{aligned}$$

lb/hr HFPO-DA Mass Emission Rate

$$\begin{aligned} &= \text{mg}/1000 / [(453.59 \text{ g}/\text{lb}) / (\text{dscf})] \times \text{dscfm} \times 60 \text{ min}/\text{hr} \\ &= 0.05 / 1,000 / [(453.59) / 70.59] \times 16,161 \times 60 \\ &= 1.57\text{E-}03 \end{aligned}$$

EPA Isokinetic Field Sheet

Methods Performed M0010

Leak Check Rates	
Sample Rate	Pitot
in. cfm	+
Initial <u>10</u>	<u>0.005</u> ✓
Mid <u>8</u>	<u>0.005</u>
Mid <u>8</u>	<u>0.005</u>
Final <u>11</u>	<u>0.005</u> ✓

Run Number	<u>P4-2</u>
Pitot Diameter	<u>36-inches</u>
Barometric Pressure	<u>29.72</u>
Static Pressure	<u>-6.8</u>
Meter Box #	<u>8</u>
Meter delta H	<u>1.56</u>
Meter Gamma	<u>0.975</u>
Pitot Number	<u>P4-2</u>
Pitot Coefficient	<u>0.84</u>
Stack TC I.D.	<u>TC-5D</u>
Oven Box I.D.	<u>OB-5</u>
Impinger Out I.D.	<u>IO-1</u>
Nozzle Size	<u>245</u>
XAD Trap I.D.	<u>NA</u>

Run Number	<u>1</u>
Stack Diameter	<u>36-inches</u>
Barometric Pressure	<u>29.72</u>
Static Pressure	<u>-6.8</u>
Meter Box #	<u>8</u>
Meter delta H	<u>1.56</u>
Meter Gamma	<u>0.975</u>
Temperature Readings in Degrees Fahrenheit	<u>K=3.3</u>

Client	The Chemours Company
Location	Fayetteville, NC
Source	VEN Inlet
Date	<u>9/3/2020</u>
Operators	<u>BE/JS</u>
Start Time	<u>1100</u>
End Time	<u>1255</u>

Impinging Data (vol)	
#	Initial Final
1	
2	
3	
4	
5	
6	

Silica Gel Data (gm)	
#	Initial Final
1	
2	

Moisture Gain	_____ ml.
	_____ gm
Total	_____

Filter Data	
#	Number Tare
1	
2	
3	

Molecular Weight Data (%)	
#	O ₂ CO ₂
1	
2	
3	
Avg	

Sample Point	Time (min)	Velocity Head (in. H ₂ O)	Orifice Setting (in. H ₂ O)	Meter Volume (ft ³)	Temperature Readings in Degrees Fahrenheit				Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
					Stack	Probe	Oven Box	Meter Inlet						
A1	4	0.66	2.18	500.79.1	95	104	102	59	55	99	98	7		
2	8	0.64	2.11	—	96	104	103	57	54	103	94	7		
3	12	0.64	2.11	508.0	96	103	105	57	56	104	99	7		
4	16	0.62	2.05	511.5	96	102	104	56	56	105	100	7		
5	20	0.60	1.98	515.4	96	102	105	53	58	107	100	7		
6	24	0.60	1.98	—	96	103	104	54	60	107	101	7		
7	28	0.52	1.77	522.1	96	103	103	53	55	107	101	7		
8	32	0.48	1.58	525.4	96	103	104	50	55	107	101	6		
9	36	0.48	1.58	528.7	96	103	103	48	54	106	101	6		
10	40	0.37	1.06	531.7	97	104	105	48	54	106	101	6		
11	44	0.32	1.06	534.3	97	103	105	49	55	106	101	6		
12	48	0.30	0.99	536.9	97	105	106	51	56	106	101	5	V=539.418 U=539.566	
B1	52	0.53	1.75	5	98	107	103	54	56	101	101	7		
2	56	0.53	1.75	—	98	103	107	52	57	104	101	7		
3	60	0.52	1.72	546.1	99	103	102	51	57	105	101	7		
4	64	0.52	1.72	549.4	99	103	102	50	55	105	101	7		
5	68	0.54	1.78	552.8	99	103	105	49	56	106	101	7		
6	72	0.58	1.91	555.6	98	104	104	54	55	126	101	7		
7	76	0.57	1.88	—	98	102	104	53	57	107	102	7		
8	80	0.52	1.71	562.0	99	102	104	57	58	108	103	7		
9	84	0.47	1.55	566.10	99	101	104	57	55	107	102	7		
10	88	0.47	1.55	569.3	99	104	103	57	54	108	103	7		
11	92	0.45	1.38	—	99	100	103	58	55	108	103	6		
12	96	0.45	1.38	574.80	99	100	103	58	54	108	103	6		
				577.861										

51427
1207



EPA Isokinetic Field Sheet

Methods Performed M0010

Client The Chemours Company
 Location Fayetteville, NC
 Source VEN Inlet
 Date 9/3/2020
 Operators BG/SS
 Start Time 1337
 End Time 1529

Run Number 2
 Stack Diameter 36-inches
 Barometric Pres. 29.97
 Static Pressure -6.8
 Meter Box # 8
 Meter delta H 1.56
 Meter Gamma 0.975

Pitot Number Py-2
 Pitot Coefficient 0.84
 Stack TC I.D. TC-50
 Oven Box I.D. 60-5
 Impinger Out I.D. 10-1
 Nozzle Size 2.245
 XAD Trap I.D. NA

Leak Check Rates	
Sample Rate in.	Pitot +
11 0.009	✓
10 0.005	✓
10 0.005	✓
12 0.006	✓

Sample Point	Sample Time (min)	Velocity Head (in. H ₂ O)	Orifice Setting (in. H ₂ O)	Meter Volume (ft ³)	Temperature Readings in Degrees Fahrenheit				Vacuum (in. hg)	Comments/Notes			
					Stack	Probe	Oven Box	Impinger			Aux	Meter Inlet	Meter Outlet
A1	4	0.64	2.11	578.53	99	103	107	64	56	102	102	6	V-578.258
	8	0.64	2.11	587.4	97	102	107	60	54	105	107	6	
	12	0.61	2.01	585.5	100	101	108	60	50	106	102	6	
	4	0.61	2.01	589.8	100	102	108	61	50	107	103	6	
	5	0.60	1.98	596.5	100	102	108	60	48	108	102	6	
	6	0.56	1.85	599.8	100	102	108	59	49	108	103	6	
	7	0.54	1.87	599.8	100	103	108	60	50	108	104	6	
	8	0.52	1.78	603.5	101	102	107	59	51	108	103	5	
	9	0.48	1.58	612.6	101	102	107	55	51	108	104	5	
	10	0.50	1.65	615.9	101	102	107	60	51	109	104	5	
	11	0.35	1.16	622.6	102	103	107	61	52	108	105	5	V: 618.136
	12	0.32	1.06	622.13	102	102	110	64	54	105	105	6	V: 618.702
B1	2	0.59	1.95	632.7	102	102	107	59	49	108	105	7	V: 618.702
	3	0.56	1.85	635.9	102	103	104	58	49	109	105	7	
	4	0.56	1.85	639.4	102	103	104	58	49	109	105	7	
	5	0.60	1.98	645.80	102	109	106	59	51	110	106	7	
	6	0.60	1.98	649.20	103	111	108	60	53	110	105	7	
	7	0.65	2.15	652.50	103	110	109	60	50	110	105	7	
	8	0.61	2.01	654.5	102	111	108	60	52	110	106	7	
	9	0.52	1.72	656.805	102	110	108	61	51	110	106	7	
	10	0.50	1.65	656.805	103	107	108	62	54	110	105	7	
	11	0.28	0.92	656.805	103	111	109	65	54	107	105	5	
	12	0.28	0.92	656.805	103	111	109	66	55	106	104	5	
					103	111	109	66	55	107	104	5	

START 1441

Impinger Data (Vol)	
#	Initial Final
1	
2	
3	
4	
5	
6	

Silica Gel Data (gm)	
#	Initial Final
1	
2	

Moisture Gain	
	ml. gm
	Total

Filter Data	
#	Number Tare
1	
2	
3	

Molecular Weight Data (%)	
#	O ₂ CO ₂
1	
2	
3	
Avg	



EPA Isokinetic Field Sheet

Methods Performed M0010

Client	The Chemours Company	Run Number	<u>3</u>	Pitot Number	<u>P4-2</u>
Location	Fayetteville, NC	Stack Diameter	<u>36-inches</u>	Pitot Coefficient	<u>0.84</u>
Source	VEN Inlet	Barometric Pres.	<u>29.92</u>	Stack TC I.D.	<u>TC-5D</u>
Date	<u>9/3/2020</u>	Static Pressure	<u>-6.8</u>	Oven Box I.D.	<u>OB-5</u>
Operators	<u>BG/JJ</u>	Meter Box #	<u>8</u>	Impinger Out I.D.	<u>IO-1</u>
Start Time	<u>16/6</u>	Meter delta H	<u>1.56</u>	Nozzle Size	<u>P. 245</u>
End Time	<u>1805</u>	Meter Gamma	<u>0.975</u>	XAD Trap I.D.	<u>NA</u>

Leak Check Rates	
Sample Rate	cfm
Initial	<u>12 0.005</u> ✓
Mid	<u>9 0.005</u>
Mid	<u>10 0.005</u>
Final	<u>10 0.006</u> ✓

Impinger Data (vol)	
#	Initial Final
1	
2	
3	
4	
5	
6	

Silica Gel Data (gm)	
#	Initial Final
1	
2	

Moisture Gain	
ml.	
gm	
Total	

Filter Data	
#	Number Tare
1	
2	
3	

Molecular Weight Data (%)	
#	O ₂ CO ₂
1	
2	
3	
Avg	

Sample Point	Sample Time (min)	Velocity Head (in. H ₂ O)	Orifice Setting (in. H ₂ O)	Meter Volume (ft ³)	Temperature Readings in Degrees Fahrenheit				Vacuum (in. hg)	Comments/Notes		
					Stack	Oven Box	Impinger	Aux			Meter Inlet	Meter Outlet
A1	4	0.65	2.15	658.042	104	111	63	52	108	106	6	
	8	0.60	1.98	661.7	104	109	62	51	110	106	6	
	12	0.60	1.98	665.4	104	107	60	48	111	106	6	
	16	0.60	1.98	689.5	104	107	60	48	112	107	6	
	20	0.60	1.98	672.3	104	108	59	50	111	106	6	
	24	0.58	1.91	675.5	104	108	59	49	111	107	6	
	28	0.54	1.78	678.9	104	108	60	50	111	107	6	
	32	0.52	1.72	682.1	104	108	60	53	111	107	5	
	36	0.50	1.65	—	104	108	59	53	111	107	5	
	40	0.44	1.45	688.3	104	107	60	52	110	107	5	
	44	0.35	1.16	691.6	102	107	60	53	110	107	5	
	48	0.30	0.99	694.2	102	107	60	53	109	108	5	
B1	52	0.58	1.91	—	104	109	63	57	106	106	7	
	56	0.56	1.85	700.5	104	110	59	52	107	106	7	
	60	0.56	1.85	703.6	104	108	60	54	108	105	7	
	64	0.53	1.91	707.5	104	107	60	54	108	105	7	
	68	0.58	1.91	—	104	109	61	54	108	104	7	
	72	0.60	1.98	713.5	104	111	60	52	108	104	7	
	76	0.60	1.98	716.9	104	110	60	50	109	104	7	
	80	0.54	1.78	724.2	104	108	59	48	108	104	7	
	84	0.54	1.78	724.4	104	107	59	49	108	104	7	
	88	0.34	1.12	727.6	104	107	55	50	107	104	6	
	92	0.30	0.99	—	104	111	58	51	107	103	5	
	96	0.28	0.92	732.6	104	109	58	57	107	103	5	
				735.101								

START 1717



Nozzle Calibration Form

Plant I.D. CHEMOURS

Project No. _____

Source I.D. VESOUTH OUTLET

Personnel BSG

Date 8/31/20

Nozzle ID:	Stainless Steel
Diameter 1	0.245
Diameter 2	0.245
Diameter 3	0.244
Average	0.245

< 0.004" between high & low diameters

Sample Train Recovery Data Sheet

Client The Chemours Co. Location Fayetteville, NC Source VEN Inlet Method M0010 Date 9/3/20

Run # 1

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>505.8</u> <u>503.2</u> <i>RC</i>	<u>492.4</u>	<u>13.4</u>	Filter #1 _____
Impinger #2	<u>754.0</u>	<u>756.6</u>	<u>-2.6</u>	Filter #2 _____
Impinger #3	<u>734.0</u>	<u>735.6</u>	<u>-1.6</u>	Filter #3 _____
Impinger #4	<u>503.2</u>	<u>500.0</u>	<u>3.2</u>	
Impinger #5	<u>831.8</u>	<u>815.4</u>	<u>16.4</u>	
Impinger #6	_____	_____	_____	
Impinger #7	_____	_____	_____	Run Start Time _____
Impinger #8	_____	_____	_____	Run End Time _____
		Total Gain	_____ ml/gm	Recovery Technician <u>P. Grady</u>

Run # 2

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>538.2</u>	<u>529.6</u>	<u>8.6</u>	Filter #1 _____
Impinger #2	<u>740.4</u>	<u>741.0</u>	<u>-0.6</u>	Filter #2 _____
Impinger #3	<u>782.2</u>	<u>783.6</u>	<u>-1.4</u>	Filter #3 _____
Impinger #4	<u>503.4</u>	<u>499.6</u>	<u>3.8</u>	
Impinger #5	<u>798.6</u>	<u>782.6</u>	_____	
Impinger #6	_____	_____	_____	
Impinger #7	_____	_____	_____	Run Start Time _____
Impinger #8	_____	_____	_____	Run End Time _____
		Total Gain	_____ ml/gm	Recovery Technician <u>P. Grady</u>

Run # 3

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>537.4</u>	<u>519.6</u>	<u>17.8</u>	Filter #1 _____
Impinger #2	<u>795.6</u>	<u>798.6</u>	<u>-3.0</u>	Filter #2 _____
Impinger #3	<u>763.2</u>	<u>763.8</u>	<u>-0.6</u>	Filter #3 _____
Impinger #4	<u>471.6</u>	<u>468.4</u>	<u>3.2</u>	
Impinger #5	<u>873.0</u>	<u>854.2</u>	<u>18.8</u>	
Impinger #6	_____	_____	_____	
Impinger #7	_____	_____	_____	Run Start Time _____
Impinger #8	_____	_____	_____	Run End Time _____
		Total Gain	_____ ml/gm	Recovery Technician <u>P. Grady</u>

VEN Carbon Bed Outlet Field Test Data

Field Data Summary
The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Outlet
Fayetteville, North Carolina

Traverse Point	Run 1						Run 2						Run 3					
	Stack Temp(F)	Delta		Tm(F)		SQR	Stack Temp(F)	Delta		Tm(F)		SQR	Stack Temp(F)	Delta		Tm(F)		SQR
		P	H	in	out			Delta P	P	H	in			out	Delta P	P	H	
A1	95	0.60	1.68	92	92	0.7746	94	0.26	0.72	97	97	0.5099	101	0.58	1.62	98	98	0.7616
2	95	0.61	1.70	92	92	0.7810	95	0.29	0.81	97	97	0.5385	102	0.61	1.70	98	98	0.7810
3	95	0.62	1.73	92	92	0.7874	95	0.33	0.92	98	98	0.5745	102	0.62	1.73	98	98	0.7874
4	95	0.61	1.70	92	92	0.7810	95	0.36	1.00	98	98	0.6000	102	0.60	1.68	98	98	0.7746
5	95	0.63	1.76	92	92	0.7937	96	0.40	1.12	98	98	0.6325	102	0.61	1.70	99	99	0.7810
6	94	0.58	1.62	93	93	0.7616	96	0.46	1.28	99	99	0.6782	102	0.59	1.65	99	99	0.7681
7	94	0.44	1.23	93	93	0.6633	96	0.60	1.68	99	99	0.7746	102	0.47	1.31	99	99	0.6856
8	94	0.46	1.28	93	93	0.6782	95	0.58	1.62	99	99	0.7616	102	0.47	1.31	99	99	0.6856
9	94	0.36	1.00	93	93	0.6000	96	0.60	1.68	100	100	0.7746	103	0.37	1.03	99	99	0.6083
10	94	0.34	0.95	94	94	0.5831	96	0.63	1.76	100	100	0.7937	102	0.32	0.89	99	99	0.5657
11	95	0.28	0.78	94	94	0.5292	96	0.61	1.70	100	100	0.7810	103	0.30	0.84	99	99	0.5477
12	95	0.26	0.72	94	94	0.5099	96	0.61	1.70	100	100	0.7810	103	0.25	0.70	99	99	0.5000
B1	95	0.47	1.31	95	95	0.6856	97	0.42	1.17	100	100	0.6481	103	0.43	1.20	97	97	0.6557
2	95	0.49	1.37	95	95	0.7000	98	0.45	1.26	100	100	0.6708	103	0.45	1.26	99	99	0.6708
3	95	0.47	1.31	95	95	0.6856	99	0.45	1.26	100	100	0.6708	103	0.47	1.31	98	98	0.6856
4	94	0.51	1.42	96	96	0.7141	99	0.48	1.34	100	100	0.6928	103	0.50	1.40	98	98	0.7071
5	95	0.57	1.59	96	96	0.7550	99	0.54	1.51	100	100	0.7348	103	0.54	1.51	98	98	0.7348
6	95	0.62	1.73	96	96	0.7874	99	0.59	1.65	100	100	0.7681	103	0.64	1.78	98	98	0.8000
7	95	0.68	1.90	96	96	0.8246	99	0.72	2.01	100	100	0.8485	103	0.71	1.98	98	98	0.8426
8	95	0.91	2.54	96	96	0.9539	103	0.82	2.29	100	100	0.9055	103	0.84	2.35	98	98	0.9165
9	95	0.90	2.52	96	96	0.9487	100	0.87	2.43	100	100	0.9327	103	0.90	2.52	99	99	0.9487
10	95	0.90	2.52	97	97	0.9487	100	0.91	2.54	100	100	0.9539	103	0.88	2.46	99	99	0.9381
11	96	0.86	2.40	97	97	0.9274	100	0.90	2.52	101	101	0.9487	103	0.90	2.52	99	99	0.9487
12	96	0.76	2.12	97	97	0.8718	100	0.79	2.21	101	101	0.8888	103	0.79	2.21	99	99	0.8888
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
Average	95	0.58	1.62	94	94	0.7519	97	0.57	1.59	99	99	0.7443	103	0.58	1.61	99	99	0.7493



Test Data Summary and Calculations
The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Outlet
Fayetteville, North Carolina

<u>Parameter</u>	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
Run Date	9/3/20	9/3/20	9/3/20
Start/Stop Time	1100-1255	1337-1529	1616-1805
Duration of Run, Minutes	96	96	96
Ave. Nozzle Diameter, inches	0.23	0.23	0.23
Pitot Calibration Factor, CF	0.84	0.84	0.84
Meter Gamma	1.013	1.013	1.013
Meter Delta H, inches of H2O	1.73	1.73	1.73
Stack Diameter, inches	36	36	36
Rectangular Width, inches	0	0	0
Rectangular Length, inches	0	0	0
Stack Area, sq.ft.	7.07	7.07	7.07
Barometric Pressure, inches of Hg	29.92	29.92	29.92
Static Pressure, inches of H2O	2.75	2.75	2.75
<u>Dry Gas Meter Sample Volume. (VM)ft³</u>			
Initial	164.393	232.266	300.035
Final	232.05	299.728	368.292
Total Volume	67.578	67.402	68.149
Ave. Stack Temperature, Ts(F)	94.8	97.5	102.6
Ave. Meter Temperature, Tm(F)	94.4	99.5	98.5
Ave. Run Delta H, inches of H2O	1.62	1.59	1.61
Ave. Square Root of Delta P	0.7519	0.7443	0.7493
<u>Moisture Data</u>			
Volume of water collected, mls	16.8	14	7.1
Silica Gel, grams	17	17.4	16.4
Total Collected, mls	33.8	31.4	23.5
<u>ORSAT Data</u>			
%O2	20.90	20.90	20.90
%CO2	0.0	0.0	0.0
%CO			

Calculations

Vw(std), scf =	1.591	1.478	1.106
Vm(std), dscf =	65.454	64.691	65.523
Bws =	0.024	0.022	0.017
Md =	28.84	28.84	28.84
Ms =	28.58	28.59	28.66
Vs, ft/sec =	43.3	43.0	43.4
Qs, acfm =	18,384	18,237	18,424
Qs(std), dscfm =	17,195	17,002	17,119
Isokinetic Sampling Rate, %	97.1	97.1	97.7

Where:

An = area of the nozzle

As = area of the stack

Vw(std) = volume of water vapor in gas, standard conditions = $0.04707 \cdot V_{lc}$

Vm(std) = vol. of gas sampled, standard conditions = $17.647 \cdot V_m \cdot \gamma \cdot [P_b + (dH/13.6)] / T_m(R)$

Bws = water vapor in gas stream, proportion by volume = $V_w(std) / (V_m(std) + V_w(std))$

Md = molecular weight of stack gas, dry basis = $(0.44 \cdot \%CO_2) + (0.32 \cdot \%O_2) + [0.28 \cdot (\%N_2 + \%CO)]$

Ms = molecular weight of stack gas, wet basis = $[M_d \cdot (1 - B_{ws})] + (18.0 \cdot B_{ws})$

Vs = stack gas velocity = $85.49 \cdot C_p \cdot (\text{avg. Sq.Rt. } dP) \cdot [Sq.Rt. (T_s(R)) / (M_s \cdot P_s)]$

Qs = stack gas flow rate = $V_s \cdot A_s \cdot 60$

Qs(std) = stack gas flow rate, standard conditions = $Q_s \cdot (1 - B_{ws}) \cdot (528 / (T_s(R))) \cdot (P_s / 29.92)$

Isokinetic sampling rate = $\{ (T_s(R)) \cdot [(0.00267 \cdot V_{lc}) + (V_m(std) / 17.647)] \cdot 100\} / (\text{Time} \cdot v_s \cdot P_s \cdot A_n \cdot x60)$

Results Summary
The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Outlet
Fayetteville, North Carolina

<u>Parameter:</u> _____	<u>Run 1</u>					<u>Run 2</u>				<u>Run 3</u>				<u>Average</u>			
	Mol. Wt.	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr
HFPO - Dimer Acid	330	0.06076	3.28E-02	2.39E-03	2.11E-03	0.10788	5.89E-02	4.29E-03	3.75E-03	0.06554	3.53E-02	2.57E-03	2.27E-03	0.08	4.23E-02	3.08E-03	2.71E-03

Where:

Pollutant Emission Concentration:

mg = total sample collected, milligrams

mg/dscm = milligrams of pollutant per dry standard cubic meter sampled = (mg/dscf) x (35.314 cubic feet/cubic meter)

ppm = parts per million = ((mg/dscm x 24.04 liters/mol)/mol.wt)

Pollutant Emission Rate:

lb/hr = pounds of pollutant emitted per hour = mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr

Example Calculations

The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Outlet
Fayetteville, North Carolina

Note: Values are shown for example purposes only.

V_{m,a} = Dry gas volume at actual conditions (acf)

Initial gas meter volume: 164.393
Final gas meter volume: 232.050
Difference: 67.657

V_{m,std} = Volume of dry gas at standard conditions (dscf)

= 17.647 x V_{m, a} x Gamma* [Pbar+ (DeltaH/13.6)]/Tm(R)
= 17.647 x 0.000 x 1.013 x (29.92 + [(1.730 /13.6) / 554
= 65.454

V_{I,c} = Volume of water collected in impingers and silica gel (ml)

impinger catch (mls): 17
silica gel (g) 17.0
total: 33.8

V_{w,std} = Volume of water vapor in gas at standard conditions (cu.ft.)

= (0.04707) x (V_{I,c})
= 0.04707 x 33.8
= 1.591

B_{w,o} = Proportion by volume of water vapor in gas stream

= V_{w,std} / (V_{w,std} + V_{m,std})
= 1.59 / (1.59 + 65.454)
= 0.024

P_s = Stack gas static pressure (in. Hg)

= St/13.6
= 2.75 / 13.6
= 0.202

P_a = Absolute stack gas pressure (in. Hg)

= P_s + P_{bar}
= 0.202 + 29.92
= 30.12

M_{F,D} = Dry mole fraction of stack gas

= 1 - B_{w,o}
= 1 - 0.024
= 0.976

M_d = Dry molecular weight of stack gas (lb/lb-mol)

= (0.32 x %O₂) + (0.44 x %CO₂) + (0.28 x %N₂)
= (0.32 x 20.90) + (0.44 x 0.00) + (0.28 x 79.10)
= 28.84

M_w = Wet molecular weight of stack gas (lb/lb-mol)

= (M_d) x (M_{F,D}) + (0.18) x (B_{w,o}*100)
= 28.84 x 0.976 + 0.18 x 2.37298
= 28.58

Example Calculations

The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Outlet
Fayetteville, North Carolina

Note: Values are shown for example purposes only.

Vs,avg = Average stack gas velocity (fps)

$$\begin{aligned} &= K_p \times (C_p) \times (\text{sqrt, delta P}) \times \text{sqrt}((T_s + 460^\circ\text{R})/\text{Mw} \times \text{Pa}) \\ &= 85.48 \times 0.84 \times 0.75 \times \text{sqrt}(\quad \quad \quad) \\ &= 43.3 \end{aligned}$$

A Cross sectional areas of stack (sq. ft)

$$\begin{aligned} &= \pi/4 \times d^2 \\ &= 3.14159/4 \times 3.00^2 \\ &= 7.07 \end{aligned}$$

Qa Volumetric flow rate at actual conditions (acfm)

$$\begin{aligned} &= (60)\text{sec}/\text{min} \times (A) \times (V_s, \text{avg}) \\ &= 60 \times 7.0686 \times 43.34 \\ &= 18,383 \end{aligned}$$

Qstd Volumetric flow rate at standard conditions (scfm)

$$\begin{aligned} &= Q_a \times (528/T_{s, \text{avg}} + 460) \times P_a/29.92 \\ &= 18,383 \times (528 / 555) \times 1.007 \\ &= 17,612 \end{aligned}$$

Qstd,dry Volumetric flow rate at dry standard conditions per minute(dscfm)

$$\begin{aligned} &= Q_{\text{std}} \times (1 - B_{\text{wo}}) \\ &= 17,612 \times 0.9763 \\ &= 17,194 \end{aligned}$$

mg/dscm HFPO-DA concentration

$$\begin{aligned} &= (\text{mg}/\text{dscf}) \times 35.314 \text{ cu. ft.}/\text{cu. meter} \\ &= (0.06 / 65.45) \times 35.314 \\ &= 3.28\text{E-}02 \end{aligned}$$

lb/hr HFPO-DA Mass Emission Rate

$$\begin{aligned} &= \text{mg}/1000 / [(453.59 \text{ g}/\text{lb}) / (\text{dscf})] \times \text{dscfm} \times 60 \text{ min}/\text{hr} \\ &= 0.06 / 1,000 / [(453.59) / 65.45] \times 17,195 \times 60 \\ &= 2.11\text{E-}03 \end{aligned}$$

EPA Isokinetic Field Sheet

Methods Performed M0010

Leak Check Rates	
Sample Rate	Pitot
in. cfm	+
Initial	0.007
Mid	0.004
Mid	0.005
Final	0.005

Pitot Number 94-3
 Pitot Coefficient 0.84
 Stack TC I.D. 14-2
 Oven Box I.D. 13-2
 Impinger Out I.D. 1.0-3
 Nozzle Size 2.30
 XAD Trap I.D. NA

Run Number 1
 Stack Diameter 36-inches
 Barometric Pres. 29.92
 Static Pressure 2.75
 Meter Box # 15
 Meter delta H 1.73
 Meter Gamma 1.013

The Chemours Company
 Fayetteville, NC
 VEN Outlet
 Date 9/3/20
 Operators EA/AM
 Start Time 1:00
 End Time 1:25

Impinger Data (Vol)	
#	Initial
1	
2	
3	
4	
5	
6	

Silica Gel Data (gm)	
#	Initial
1	
2	

Moisture Gain	
	ml.
	gm
	Total

Filter Data	
#	Number
1	
2	
3	

Molecular Weight Data (%)	
#	O ₂
	CO ₂
1	
2	
3	
Avg	

Sample Point	Temperature Readings in Degrees Fahrenheit					Meter Volume (ft ³)	Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
	4	8	12	16	20										
A1	4	8	12	16	20	164.393	95	99	67	64	92	92	3		
	2	8	12	16	20	167.2	95	99	64	62	92	92	3		
	3	12	16	20	24	169.9	95	101	62	55	92	92	3		
	4	16	20	24	28	173.0	95	101	61	55	92	92	3		
	5	20	24	28	32	176.0	95	100	60	56	92	92	3		
	6	24	28	32	36	179.0	94	101	61	57	93	93	3		
	7	28	32	36	40	184.3	94	99	62	58	93	93	3		
	8	32	36	40	44	186.8	94	99	62	58	93	93	3		
	9	36	40	44	48	189.1	94	99	63	57	93	93	3		
	10	40	44	48	44	191.2	94	99	63	57	93	93	3		
	11	44	48	44	48	193.1	95	99	64	59	94	94	3	0.28 AP	
B1	12	48	52	56	60	195.203	95	99	65	61	94	94	3	OK.	
	2	56	60	64	68	197.6	95	99	66	50	95	95	4	Volume:	
	3	60	64	68	72	200.3	95	99	65	49	95	95	4	195.124	
	4	64	68	72	76	205.4	94	99	68	48	95	95	4	195.203	
	5	68	72	76	80	208.4	95	99	56	48	96	96	4	-0.079 cuf.	
	6	72	76	80	84	211.3	95	99	57	47	96	96	4		
	7	76	80	84	88	217.8	95	99	57	48	96	96	4		
	8	80	84	88	92	221.4	95	99	58	48	96	96	4		
	9	84	88	92	96	225.0	95	99	55	49	96	96	4		
	10	88	92	96	100	228.5	95	99	55	50	97	97	5		
	11	92	96	100	100	232.050	96	100	56	50	97	97	5		
	12	96	100	100	100		96	100	57	51	97	97	5		



EPA Isokinetic Field Sheet

Methods Performed M0010

Client The Chemours Company
 Location Fayetteville, NC
 Source VEN Outlet
 Date 9/3/20
 Operators EA/AA
 Start Time 1337
 End Time 1425

Run Number 2
 Stack Diameter 36-inches
 Barometric Pres. 29.92
 Static Pressure 2.75
 Meter Box # 15
 Meter delta H 1.73
 Meter Gamma 1.013

Pitot Number P4-3
 Pitot Coefficient 0.84
 Stack TC I.D. P4-3
 Oven Box I.D. 06-2
 Impinging Out I.D. 50-3
 Nozzle Size 0.250
 XAD Trap I.D. NA

Leak Check Rates		
Sample Rate	Pitot	
in. cfm	+	-
Initial <u>10</u>	<u>0.010</u>	<input checked="" type="checkbox"/>
Mid <u>9</u>	<u>0.009</u>	<input checked="" type="checkbox"/>
Mid <u>10</u>	<u>0.008</u>	<input checked="" type="checkbox"/>
Final <u>10</u>	<u>0.009</u>	<input checked="" type="checkbox"/>

Sample Point	Time (min)	Velocity Head (in. H ₂ O)	Orifice Setting (in. H ₂ O)	Meter Volume (ft ³)	Temperature Readings in Degrees Fahrenheit				Impinging	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
					Stack	Probe	Oven Box							
A1	4	0.26	0.72	232.266	94	104	106	67	50	97	97	2		
	8	0.29	0.81	234.7	95	103	106	65	48	97	97	2		
	12	0.33	0.92	236.2	95	100	106	59	49	98	98	3		
	16	0.36	1.00	238.5	95	100	104	58	50	98	98	3		
	20	0.40	1.12	240.6	96	100	104	58	50	98	98	3		
	24	0.46	1.28	243.0	96	100	103	59	51	99	99	4		
	28	0.60	1.68	245.6	96	100	102	60	44	99	99	4		
	32	0.58	1.62	-	95	100	102	61	49	99	99	4		
	36	0.60	1.68	251.7	96	100	101	62	52	100	100	4		
	40	0.63	1.74	254.5	96	101	102	61	53	100	100	4		
	44	0.61	1.70	257.5	96	101	101	62	53	100	100	4		
	48	0.61	1.70	260.5	96	101	101	62	54	100	100	4		
B1	52	0.42	1.17	263.575	97	105	103	64	62	100	100	4	lx. cx.	
	56	0.48	1.26	265.9	98	105	102	63	49	100	100	4	Vol. 263.575	
	60	0.45	1.26	-	98	103	102	59	50	100	100	4	263.575	
	64	0.44	1.34	270.6	99	104	103	60	49	100	100	4	-0.060 w. A	
	68	0.54	1.51	273.3	99	108	103	60	51	100	100	4		
	72	0.59	1.65	276.1	99	108	103	61	51	100	100	4		
	76	0.72	2.01	279.0	99	106	104	61	50	100	100	5		
	80	0.82	2.29	282.0	103	106	103	61	49	100	100	5		
	84	0.87	2.43	285.3	100	105	104	62	52	100	100	5		
	88	0.91	2.54	289.0	100	105	104	62	51	100	100	5		
	92	0.90	2.52	292.7	100	106	105	63	51	101	101	5		
	96	0.79	2.21	-	100	106	104	63	51	101	101	5		
				299.728										

Impinging Data (vol)	
#	Initial Final
1	
2	
3	
4	
5	
6	

Silica Gel Data (gm)	
#	Initial Final
1	
2	

Moisture Gain	
#	Initial Final
1	
2	

Filter Data	
#	Number Tare
1	
2	
3	

Molecular Weight Data (%)	
#	O ₂ CO ₂
1	
2	
3	
Avg	



EPA Isokinetic Field Sheet

Methods Performed M0010

	Leak Check Rates	
	Sample Rate in. cfm	Pitot +
Initial	<u>11</u>	<u>0.007</u>
Mid	<u>10</u>	<u>0.006</u>
Mid	<u>12</u>	<u>0.006</u>
Final	<u>9</u>	<u>0.007</u>

Pitot Number 14-3
 Pitot Coefficient 0.84
 Stack TC I.D. 14.3
 Oven Box I.D. 08.2
 Impinger Out I.D. 30.3
 Nozzle Size
 XAD Trap I.D. NA

Run Number 3
 Stack Diameter 36-inches
 Barometric Pres. 29.92
 Static Pressure 2.75
 Meter Box # 15
 Meter delta H 1.73
 Meter Gamma 1.013

The Chemours Company
 Fayetteville, NC
 VEN Outlet
 Date 9/3/20
 Operators EA/AA
 Start Time 1416
 End Time 1704

Sample Point	Sample Time (min)	Velocity Head (in. H ₂ O)	Orifice Setting (in. H ₂ O)	Meter Volume (ft ³)	Temperature Readings in Degrees Fahrenheit				Vacuum (in. hg)	Comments/Notes			
					Stack	Probe	Oven Box	Impinger			Aux	Meter Inlet	Meter Outlet
A1	4	0.58	1.62	300.035	101	106	107	68	65	98	98	3	
	8	0.61	1.70	302.8	102	107	108	66	54	98	98	3	
	12	0.62	1.73	305.9	102	107	108	64	55	98	98	3	
	16	0.60	1.68	308.7	102	107	109	63	57	98	98	3	
	20	0.61	1.70	311.8	102	107	116	63	57	99	99	3	
	24	0.59	1.65		102	108	111	63	57	99	99	3	
	28	0.47	1.31	317.5	102	107	109	63	58	99	99	3	
	32	0.47	1.31		102	107	108	64	59	99	99	3	
	36	0.37	1.03	322.9	103	109	107	64	60	98	98	3	
	40	0.32	0.89	325.3	102	107	107	63	61	99	99	3	
	44	0.30	0.84	321.5	103	107	106	63	62	99	99	3	
	48	0.25	0.70	329.4	103	107	107	64	63	99	99	3	
B1	52	0.43	1.20	331.643	103	107	107	67	60	97	97	3	
	56	0.45	1.24	334.2	103	108	106	67	47	99	99	3	
	60	0.47	1.31	336.7	103	107	107	69	48	98	98	3	
	64	0.50	1.40	339.3	103	108	107	59	47	98	98	3	
	68	0.54	1.51	341.9	103	102	105	59	48	98	98	4	
	72	0.64	1.78	347.6	103	107	107	58	47	98	98	4	
	76	0.71	1.98	350.7	103	107	107	58	47	98	98	4	
	80	0.84	2.35	354.1	103	106	107	58	48	98	98	5	
	84	0.90	2.52	357.7	103	107	107	57	49	99	99	5	
	88	0.88	2.46	357.7	103	107	107	57	49	99	99	5	
	92	0.90	2.52	361.3	103	107	107	59	50	99	99	5	
	96	0.79	2.21	364.9	103	107	108	59	51	99	99	5	
				368.292									

Silica Gel Data (gm)	
#	Initial / Final
1	
2	

Moisture Gain	
	ml.
	gm
	Total

Filter Data	
#	Number / Tare
1	
2	
3	

Molecular Weight Data (%)	
#	O ₂ / CO ₂
1	
2	
3	
Avg	



Nozzle Calibration Form

Plant I.D. Chemours

Project No. _____

Source I.D. VES Inlet

Personnel P. Grady

Date 8/31/20

Nozzle ID:	Stainless Steel
Diameter 1	.230
Diameter 2	.229
Diameter 3	.230
Average	.230

< 0.004" between high & low diameters

Sample Train Recovery Data Sheet

Client The Chemours Co. Location Fayetteville, NC Source VEN OUTLET Method M0010 Date 9/3/20

Run # 1

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>528.4</u>	<u>512.2</u>		Filter #1 _____
Impinger #2	<u>793.8</u>	<u>796.2</u>		Filter #2 _____
Impinger #3	<u>776.2</u>	<u>777.4</u>		Filter #3 _____
Impinger #4	<u>488.0</u>	<u>483.8</u>		Run Start Time _____
Impinger #5	<u>900.4</u>	<u>883.4</u>		Run End Time _____
Impinger #6				Recovery Technician <u>P. Grady</u>
Impinger #7				
Impinger #8				
		Total Gain		ml/gm

Run # 2

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>521.4</u>	<u>508.0</u>		Filter #1 _____
Impinger #2	<u>706.8</u>	<u>708.4</u>		Filter #2 _____
Impinger #3	<u>782.8</u>	<u>783.8</u>		Filter #3 _____
Impinger #4	<u>493.2</u>	<u>490.4</u>		Run Start Time _____
Impinger #5	<u>559.8</u>	<u>842.4</u>		Run End Time _____
Impinger #6				Recovery Technician <u>P. Grady</u>
Impinger #7				
Impinger #8				
		Total Gain		ml/gm

Run # 3

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>526.6</u> 538.2 (P)	<u>512.2</u>		Filter #1 _____
Impinger #2	<u>785.0</u>	<u>788.4</u>		Filter #2 _____
Impinger #3	<u>776.6</u>	<u>778.0</u>		Filter #3 _____
Impinger #4	<u>487.4</u> 503.4 (P)	<u>483.4</u>		Run Start Time _____
Impinger #5	<u>776.4</u> 798.4 (P)	<u>760.0</u>		Run End Time _____
Impinger #6				Recovery Technician <u>P. Grady</u>
Impinger #7				
Impinger #8				
		Total Gain		ml/gm

APPENDIX D LABORATORY DATA

VEN Carbon Bed Inlet Laboratory Data

ANALYTICAL REPORT

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

Laboratory Job ID: 140-20287-1
Client Project/Site: VEN CB Inlet - M0010

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:
9/21/2020 2:09:13 PM

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

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	6
Client Sample Results	8
Default Detection Limits	11
Isotope Dilution Summary	12
QC Sample Results	13
QC Association Summary	16
Lab Chronicle	19
Certification Summary	25
Method Summary	26
Sample Summary	27
Chain of Custody	28

Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Qualifiers

LCMS

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

Case Narrative

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Job ID: 140-20287-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative 140-20287-1

Sample Receipt

The samples were received on September 4, 2020 at 12:35 PM in good condition and properly preserved. The temperature of the cooler at receipt was 1.2° C.

LCMS

Method 537 (modified): Results for samples GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3 CONDENSATE (140-20287-11) 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 diluted to bring the concentration of target analytes within the calibration range: GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3 CONDENSATE (140-20287-11). Elevated reporting limits (RLs) are provided.

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): GF-2522,2523 VEN CB INLET R1 M0010 FH (140-20287-1), GF-2529,2530 VEN CB INLET R2 M0010 FH (140-20287-5) and GF-2536,2537 VEN CB INLET R3 M0010 FH (140-20287-9). 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: GF-2522,2523 VEN CB INLET R1 M0010 FH (140-20287-1), GF-2529,2530 VEN CB INLET R2 M0010 FH (140-20287-5) and GF-2536,2537 VEN CB INLET R3 M0010 FH (140-20287-9). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples GF-2535 VEN CB INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20287-8) and GF-2542 VEN CB INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20287-12) 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 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): GF-2524,2525,2527 VEN CB INLET R1 M0010 BH (140-20287-2), GF-2531,2532,2534 VEN CB INLET R2 M0010 BH (140-20287-6) and GF-2538,2539,2541 VEN CB INLET R3 M0010 BH (140-20287-10). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The method blank for preparation batch 140-42523 and 140-42590 contained HFPO-DA above the reporting limit (RL). The entire sample was consumed during analysis or extraction, therefore, the data have been reported.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: GF-2524,2525,2527 VEN CB INLET R1 M0010 BH (140-20287-2), GF-2531,2532,2534 VEN CB INLET R2 M0010 BH (140-20287-6), GF-2535 VEN CB INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20287-8), GF-2538,2539,2541 VEN CB INLET R3 M0010 BH (140-20287-10) and GF-2542 VEN CB INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20287-12). 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: GF-2528 VEN CB INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20287-4). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): The required dilution factor for the following sample was higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): GF-2528 VEN CB INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20287-4). 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.

Case Narrative

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Job ID: 140-20287-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Organic Prep

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

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Client Sample ID: GF-2522,2523 VEN CB INLET R1 M0010 FH **Lab Sample ID: 140-20287-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	32.8		0.992	0.575	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2524,2525,2527 VEN CB INLET R1 M0010 BH **Lab Sample ID: 140-20287-2**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	3.94		0.160	0.140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2526 VEN CB INLET R1 M0010 IMP 1,2&3 CONDENSATE **Lab Sample ID: 140-20287-3**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.58	B	0.0585	0.00965	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2528 VEN CB INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE **Lab Sample ID: 140-20287-4**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	13.5		0.800	0.700	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2529,2530 VEN CB INLET R2 M0010 FH **Lab Sample ID: 140-20287-5**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	416		10.0	5.80	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2531,2532,2534 VEN CB INLET R2 M0010 BH **Lab Sample ID: 140-20287-6**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	38.3		1.60	1.40	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2533 VEN CB INLET R2 M0010 IMP 1,2&3 CONDENSATE **Lab Sample ID: 140-20287-7**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.41	B	0.0660	0.0109	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2535 VEN CB INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE **Lab Sample ID: 140-20287-8**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.203		0.00800	0.00700	ug/Sample	5		537 (modified)	Total/NA

Client Sample ID: GF-2536,2537 VEN CB INLET R3 M0010 FH **Lab Sample ID: 140-20287-9**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	165		5.00	2.90	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2538,2539,2541 VEN CB INLET R3 M0010 BH **Lab Sample ID: 140-20287-10**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	41.2		1.60	1.40	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurolins TestAmerica, Knoxville

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

**Client Sample ID: GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3
CONDENSATE**

Lab Sample ID: 140-20287-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	8.07	B	0.220	0.0363	ug/Sample	4		537 (modified)	Total/NA

**Client Sample ID: GF-2542 VEN CB INLET R3 M0010
BREAKTHROUGH XAD-2 RESIN TUBE**

Lab Sample ID: 140-20287-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.386	B	0.00800	0.00700	ug/Sample	5		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Client Sample ID: GF-2522,2523 VEN CB INLET R1 M0010 FH

Lab Sample ID: 140-20287-1

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	32.8		0.992	0.575	ug/Sample		09/09/20 11:52	09/16/20 16:13	1
Isotope Dilution	%Recovery	Qualifier	Limits						
¹³ C3 HFPO-DA	97		25 - 150						
Prepared	Analyzed	Dil Fac							
09/09/20 11:52	09/16/20 16:13	1							

Client Sample ID: GF-2524,2525,2527 VEN CB INLET R1 M0010 BH

Lab Sample ID: 140-20287-2

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	3.94		0.160	0.140	ug/Sample		09/08/20 09:30	09/18/20 15:42	1
Isotope Dilution	%Recovery	Qualifier	Limits						
¹³ C3 HFPO-DA	94		25 - 150						
Prepared	Analyzed	Dil Fac							
09/08/20 09:30	09/18/20 15:42	1							

Client Sample ID: GF-2526 VEN CB INLET R1 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20287-3

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.58	B	0.0585	0.00965	ug/Sample		09/14/20 11:33	09/15/20 12:49	1
Isotope Dilution	%Recovery	Qualifier	Limits						
¹³ C3 HFPO-DA	109		25 - 150						
Prepared	Analyzed	Dil Fac							
09/14/20 11:33	09/15/20 12:49	1							

Client Sample ID: GF-2528 VEN CB INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20287-4

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	13.5		0.800	0.700	ug/Sample		09/08/20 09:30	09/19/20 15:58	1
Isotope Dilution	%Recovery	Qualifier	Limits						
¹³ C3 HFPO-DA	97		25 - 150						
Prepared	Analyzed	Dil Fac							
09/08/20 09:30	09/19/20 15:58	1							

Client Sample ID: GF-2529,2530 VEN CB INLET R2 M0010 FH

Lab Sample ID: 140-20287-5

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	416		10.0	5.80	ug/Sample		09/09/20 11:52	09/16/20 16:21	1

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Client Sample ID: GF-2529,2530 VEN CB INLET R2 M0010 FH

Lab Sample ID: 140-20287-5

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	97		25 - 150	09/09/20 11:52	09/16/20 16:21	1

Client Sample ID: GF-2531,2532,2534 VEN CB INLET R2 M0010 BH

Lab Sample ID: 140-20287-6

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	38.3		1.60	1.40	ug/Sample		09/08/20 09:30	09/18/20 15:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	88		25 - 150	09/08/20 09:30	09/18/20 15:59	1

Client Sample ID: GF-2533 VEN CB INLET R2 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20287-7

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.41	B	0.0660	0.0109	ug/Sample		09/14/20 11:33	09/15/20 16:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	99		25 - 150	09/14/20 11:33	09/15/20 16:02	1

Client Sample ID: GF-2535 VEN CB INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20287-8

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.203		0.00800	0.00700	ug/Sample		09/08/20 09:30	09/18/20 16:08	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	70		25 - 150	09/08/20 09:30	09/18/20 16:08	5

Client Sample ID: GF-2536,2537 VEN CB INLET R3 M0010 FH

Lab Sample ID: 140-20287-9

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	165		5.00	2.90	ug/Sample		09/09/20 11:52	09/16/20 16:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	94		25 - 150	09/09/20 11:52	09/16/20 16:30	1

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

**Client Sample ID: GF-2538,2539,2541 VEN CB INLET R3
 M0010 BH**

Lab Sample ID: 140-20287-10

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	41.2		1.60	1.40	ug/Sample		09/08/20 09:30	09/18/20 16:17	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	88		25 - 150				09/08/20 09:30	09/18/20 16:17	1

**Client Sample ID: GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3
 CONDENSATE**

Lab Sample ID: 140-20287-11

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	8.07	B	0.220	0.0363	ug/Sample		09/14/20 11:33	09/15/20 13:06	4
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	105		25 - 150				09/14/20 11:33	09/15/20 13:06	4

**Client Sample ID: GF-2542 VEN CB INLET R3 M0010
 BREAKTHROUGH XAD-2 RESIN TUBE**

Lab Sample ID: 140-20287-12

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.386	B	0.00800	0.00700	ug/Sample		09/08/20 09:30	09/18/20 16:26	5
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	80		25 - 150				09/08/20 09:30	09/18/20 16:26	5

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

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

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

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)	
140-20287-1	GF-2522,2523 VEN CB INLET F	97	
140-20287-2	GF-2524,2525,2527 VEN CB INLET R1 M0010 BH	94	
140-20287-3	GF-2526 VEN CB INLET R1 M0010 IMP 1,2&3 CONDENSATE	109	
140-20287-4	GF-2528 VEN CB INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	97	
140-20287-5	GF-2529,2530 VEN CB INLET R2 M0010 FH	97	
140-20287-6	GF-2531,2532,2534 VEN CB INLET R2 M0010 BH	88	
140-20287-7	GF-2533 VEN CB INLET R2 M0010 IMP 1,2&3 CONDENSATE	99	
140-20287-8	GF-2535 VEN CB INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	70	
140-20287-9	GF-2536,2537 VEN CB INLET R3 M0010 FH	94	
140-20287-10	GF-2538,2539,2541 VEN CB INLET R3 M0010 BH	88	
140-20287-11	GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3 CONDENSATE	105	
140-20287-12	GF-2542 VEN CB INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	80	
LCS 140-42523/2-B	Lab Control Sample	55	
LCS 140-42561/2-B	Lab Control Sample	87	
LCS 140-42711/2-B	Lab Control Sample	97	
LCSD 140-42523/3-B	Lab Control Sample Dup	64	
LCSD 140-42561/3-B	Lab Control Sample Dup	83	
LCSD 140-42711/3-B	Lab Control Sample Dup	103	
MB 140-42523/15-B	Method Blank	59	
MB 140-42523/1-B	Method Blank	51	
MB 140-42561/1-B	Method Blank	85	
MB 140-42711/14-B	Method Blank	95	
MB 140-42711/1-B	Method Blank	99	

Surrogate Legend

HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-42523/15-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42523

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001663		0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 14:04	1
Isotope Dilution	%Recovery	MB Qualifier	MB Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	59		25 - 150				09/08/20 09:30	09/18/20 14:04	1

Lab Sample ID: MB 140-42523/1-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42523

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 13:55	1
Isotope Dilution	%Recovery	MB Qualifier	MB Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	51		25 - 150				09/08/20 09:30	09/18/20 13:55	1

Lab Sample ID: LCS 140-42523/2-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42523

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.01854		ug/Sample		93	60 - 140
Isotope Dilution	%Recovery	LCS Qualifier	LCS Limits				
13C3 HFPO-DA	55		25 - 150				

Lab Sample ID: LCSD 140-42523/3-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42523

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0200	0.01662		ug/Sample		83	60 - 140	11	30
Isotope Dilution	%Recovery	LCSD Qualifier	LCSD Limits						
13C3 HFPO-DA	64		25 - 150						

Lab Sample ID: MB 140-42561/1-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 15:11	1
Isotope Dilution	%Recovery	MB Qualifier	MB Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	85		25 - 150				09/09/20 11:52	09/16/20 15:11	1

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

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

Lab Sample ID: LCS 140-42561/2-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42561

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.01768		ug/Sample		88	60 - 140
<i>Isotope Dilution</i>		<i>%Recovery</i>	<i>Qualifier</i>				<i>Limits</i>
13C3 HFPO-DA		87					25 - 150

Lab Sample ID: LCSD 140-42561/3-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42561

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0200	0.01792		ug/Sample		90	60 - 140	1	30
<i>Isotope Dilution</i>		<i>%Recovery</i>	<i>Qualifier</i>				<i>Limits</i>		
13C3 HFPO-DA		83					25 - 150		

Lab Sample ID: MB 140-42711/14-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0001444	J	0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:56	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	95		25 - 150				09/14/20 11:33	09/15/20 11:56	1

Lab Sample ID: MB 140-42711/1-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:47	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	99		25 - 150				09/14/20 11:33	09/15/20 11:47	1

Lab Sample ID: LCS 140-42711/2-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42711

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0100	0.009984		ug/Sample		100	60 - 140
<i>Isotope Dilution</i>		<i>%Recovery</i>	<i>Qualifier</i>				<i>Limits</i>
13C3 HFPO-DA		97					25 - 150

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

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

Lab Sample ID: LCSD 140-42711/3-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42711

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0100	0.009072		ug/Sample		91	60 - 140	10	30
		<i>LCSD</i>	<i>LCSD</i>						
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>						
<i>13C3 HFPO-DA</i>	<i>103</i>		<i>25 - 150</i>						

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

LCMS

Prep Batch: 42523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-2	GF-2524,2525,2527 VEN CB INLET R1 M0010 B	Total/NA	Air	None	
140-20287-4	GF-2528 VEN CB INLET R1 M0010 BREAKTHR	Total/NA	Air	None	
140-20287-6	GF-2531,2532,2534 VEN CB INLET R2 M0010 B	Total/NA	Air	None	
140-20287-8	GF-2535 VEN CB INLET R2 M0010 BREAKTHR	Total/NA	Air	None	
140-20287-10	GF-2538,2539,2541 VEN CB INLET R3 M0010 B	Total/NA	Air	None	
140-20287-12	GF-2542 VEN CB INLET R3 M0010 BREAKTHR	Total/NA	Air	None	
MB 140-42523/15-B	Method Blank	Total/NA	Air	None	
MB 140-42523/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 42561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-1	GF-2522,2523 VEN CB INLET R1 M0010 FH	Total/NA	Air	None	
140-20287-5	GF-2529,2530 VEN CB INLET R2 M0010 FH	Total/NA	Air	None	
140-20287-9	GF-2536,2537 VEN CB INLET R3 M0010 FH	Total/NA	Air	None	
MB 140-42561/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-2	GF-2524,2525,2527 VEN CB INLET R1 M0010 B	Total/NA	Air	Split	42523
140-20287-4	GF-2528 VEN CB INLET R1 M0010 BREAKTHR	Total/NA	Air	Split	42523
140-20287-6	GF-2531,2532,2534 VEN CB INLET R2 M0010 B	Total/NA	Air	Split	42523
140-20287-8	GF-2535 VEN CB INLET R2 M0010 BREAKTHR	Total/NA	Air	Split	42523
140-20287-10	GF-2538,2539,2541 VEN CB INLET R3 M0010 B	Total/NA	Air	Split	42523
140-20287-12	GF-2542 VEN CB INLET R3 M0010 BREAKTHR	Total/NA	Air	Split	42523
MB 140-42523/15-B	Method Blank	Total/NA	Air	Split	42523
MB 140-42523/1-B	Method Blank	Total/NA	Air	Split	42523
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	Split	42523
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42523

Cleanup Batch: 42591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-1	GF-2522,2523 VEN CB INLET R1 M0010 FH	Total/NA	Air	Split	42561
140-20287-5	GF-2529,2530 VEN CB INLET R2 M0010 FH	Total/NA	Air	Split	42561
140-20287-9	GF-2536,2537 VEN CB INLET R3 M0010 FH	Total/NA	Air	Split	42561
MB 140-42561/1-B	Method Blank	Total/NA	Air	Split	42561
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	Split	42561
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42561

Prep Batch: 42711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-3	GF-2526 VEN CB INLET R1 M0010 IMP 1,2&3 C	Total/NA	Air	None	
140-20287-7	GF-2533 VEN CB INLET R2 M0010 IMP 1,2&3 C	Total/NA	Air	None	
140-20287-11	GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3 C	Total/NA	Air	None	
MB 140-42711/14-B	Method Blank	Total/NA	Air	None	
MB 140-42711/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	None	

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

LCMS

Cleanup Batch: 42725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-3	GF-2526 VEN CB INLET R1 M0010 IMP 1,2&3 C	Total/NA	Air	Split	42711
140-20287-7	GF-2533 VEN CB INLET R2 M0010 IMP 1,2&3 C	Total/NA	Air	Split	42711
140-20287-11	GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3 C	Total/NA	Air	Split	42711
MB 140-42711/14-B	Method Blank	Total/NA	Air	Split	42711
MB 140-42711/1-B	Method Blank	Total/NA	Air	Split	42711
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	Split	42711
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42711

Analysis Batch: 42757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-3	GF-2526 VEN CB INLET R1 M0010 IMP 1,2&3 C	Total/NA	Air	537 (modified)	42725
140-20287-7	GF-2533 VEN CB INLET R2 M0010 IMP 1,2&3 C	Total/NA	Air	537 (modified)	42725
140-20287-11	GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3 C	Total/NA	Air	537 (modified)	42725
MB 140-42711/14-B	Method Blank	Total/NA	Air	537 (modified)	42725
MB 140-42711/1-B	Method Blank	Total/NA	Air	537 (modified)	42725
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42725
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42725

Cleanup Batch: 42822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-1	GF-2522,2523 VEN CB INLET R1 M0010 FH	Total/NA	Air	Dilution	42591
140-20287-5	GF-2529,2530 VEN CB INLET R2 M0010 FH	Total/NA	Air	Dilution	42591
140-20287-9	GF-2536,2537 VEN CB INLET R3 M0010 FH	Total/NA	Air	Dilution	42591

Analysis Batch: 42824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-1	GF-2522,2523 VEN CB INLET R1 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20287-5	GF-2529,2530 VEN CB INLET R2 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20287-9	GF-2536,2537 VEN CB INLET R3 M0010 FH	Total/NA	Air	537 (modified)	42822
MB 140-42561/1-B	Method Blank	Total/NA	Air	537 (modified)	42591
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42591
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42591

Cleanup Batch: 42906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-2	GF-2524,2525,2527 VEN CB INLET R1 M0010 B	Total/NA	Air	Dilution	42590
140-20287-4	GF-2528 VEN CB INLET R1 M0010 BREAKTHR	Total/NA	Air	Dilution	42590
140-20287-6	GF-2531,2532,2534 VEN CB INLET R2 M0010 B	Total/NA	Air	Dilution	42590
140-20287-10	GF-2538,2539,2541 VEN CB INLET R3 M0010 B	Total/NA	Air	Dilution	42590

Analysis Batch: 42907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-2	GF-2524,2525,2527 VEN CB INLET R1 M0010 B	Total/NA	Air	537 (modified)	42906
140-20287-6	GF-2531,2532,2534 VEN CB INLET R2 M0010 B	Total/NA	Air	537 (modified)	42906
140-20287-8	GF-2535 VEN CB INLET R2 M0010 BREAKTHR	Total/NA	Air	537 (modified)	42590
140-20287-10	GF-2538,2539,2541 VEN CB INLET R3 M0010 B	Total/NA	Air	537 (modified)	42906
140-20287-12	GF-2542 VEN CB INLET R3 M0010 BREAKTHR	Total/NA	Air	537 (modified)	42590
MB 140-42523/15-B	Method Blank	Total/NA	Air	537 (modified)	42590
MB 140-42523/1-B	Method Blank	Total/NA	Air	537 (modified)	42590
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42590
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42590

Eurofins TestAmerica, Knoxville

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

LCMS

Analysis Batch: 42934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20287-4	GF-2528 VEN CB INLET R1 M0010 BREAKTHR	Total/NA	Air	537 (modified)	42906

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Client Sample ID: GF-2522,2523 VEN CB INLET R1 M0010 FH

Lab Sample ID: 140-20287-1

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	121 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			61 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			10 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 16:13	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2524,2525,2527 VEN CB INLET R1 M0010 BH

Lab Sample ID: 140-20287-2

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42906	09/18/20 12:20	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 15:42	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2526 VEN CB INLET R1 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20287-3

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00855 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:49	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2528 VEN CB INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20287-4

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Cleanup	Dilution			20 uL	10000 uL	42906	09/18/20 12:20	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42934	09/19/20 15:58	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Client Sample ID: GF-2529,2530 VEN CB INLET R2 M0010 FH

Lab Sample ID: 140-20287-5

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	98 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			49 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			1 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 16:21	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2531,2532,2534 VEN CB INLET R2 M0010 BH

Lab Sample ID: 140-20287-6

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Cleanup	Dilution			10 uL	10000 uL	42906	09/18/20 12:20	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 15:59	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2533 VEN CB INLET R2 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20287-7

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00758 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 16:02	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2535 VEN CB INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20287-8

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		5			42907	09/18/20 16:08	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Client Sample ID: GF-2536,2537 VEN CB INLET R3 M0010 FH

Lab Sample ID: 140-20287-9

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	78 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			39 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			2 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 16:30	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: GF-2538,2539,2541 VEN CB INLET R3 M0010 BH

Lab Sample ID: 140-20287-10

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Cleanup	Dilution			10 uL	10000 uL	42906	09/18/20 12:20	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 16:17	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20287-11

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00909 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		4			42757	09/15/20 13:06	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: GF-2542 VEN CB INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20287-12

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		5			42907	09/18/20 16:26	JRC	TAL KNX

Instrument ID: LCA

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42523/15-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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:04	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42523/1-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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 13:55	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42561/1-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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:11	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42711/14-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:56	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42711/1-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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:47	JRC	TAL KNX

Instrument ID: LCA

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42523/2-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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:13	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42561/2-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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:29	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42711/2-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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:05	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42523/3-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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:21	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42561/3-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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:38	JRC	TAL KNX

Instrument ID: LCA

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42711/3-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dil Factor</u>	<u>Initial Amount</u>	<u>Final Amount</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:14	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
 Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

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
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-21
Colorado	State	TN00009	02-28-21
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	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	LA110001	12-31-12 *
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-21
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
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	01-19-21
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Inlet - M0010

Job ID: 140-20287-1

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 - M0010

Job ID: 140-20287-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-20287-1	GF-2522,2523 VEN CB INLET R1 M0010 FH	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-2	GF-2524,2525,2527 VEN CB INLET R1 M0010 BH	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-3	GF-2526 VEN CB INLET R1 M0010 IMP 1,2&3 CONDENSATE	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-4	GF-2528 VEN CB INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-5	GF-2529,2530 VEN CB INLET R2 M0010 FH	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-6	GF-2531,2532,2534 VEN CB INLET R2 M0010 BH	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-7	GF-2533 VEN CB INLET R2 M0010 IMP 1,2&3 CONDENSATE	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-8	GF-2535 VEN CB INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-9	GF-2536,2537 VEN CB INLET R3 M0010 FH	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-10	GF-2538,2539,2541 VEN CB INLET R3 M0010 BH	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-11	GF-2540 VEN CB INLET R3 M0010 IMP 1,2&3 CONDENSATE	Air	09/03/20 00:00	09/04/20 12:35	
140-20287-12	GF-2542 VEN CB INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/03/20 00:00	09/04/20 12:35	

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



Environment Testing
 TestAmerica

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 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 Numl TALS Reports.

Analytical Parameter:	Holding Time Requirements:
HFPO-DA (CAS No. 13252-13-6)	14 Days to Extraction; 40 Days to Analysis



140-20287 Chain of Custody

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2522 VEN CB Inlet R1 M0010 Filter	1	9/3/20		125 mL HDPE Wide-Mouth Bottle	Particulate Filter (90 mm Whatman Glass Microfiber) Method 0010 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. Knoxville: Analyze for HFPO-DA.
GF-2523 VEN CB Inlet R1 M0010 FH of Filter Holder & Probe MeOH Rinse	1	9/3/20		125 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the Particulate Filter extraction.
GF-2524 VEN CB Inlet R1 M0010 XAD-2 Resin Tube	1	9/3/20		XAD-2 Resin Tube	XAD-2 Resin Tube Method 0010 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. Knoxville: Analyze for HFPO-DA.

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



Environment Testing
 TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2525 VEN CB Inlet R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	1	9/3/20		125 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Knoxville: Analyze for HFPO-DA.
GF-2526 VEN CB Inlet R1 M0010 Impingers 1,2 & 3 Condensate	1	9/3/20		500 mL HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate Method 0010 Train HFPO-DA Analysis	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. Knoxville: Analyze for HFPO-DA.
GF-2527 VEN CB Inlet R1 M0010 Impinger Glassware MeOH Rinse	1	9/3/20		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
GF-2528 VEN CB Inlet R1 M0010 Breakthrough XAD-2 Resin Tube	1	9/3/20		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 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. Knoxville: Analyze for HFPO-DA.
GF-2529 VEN CB Inlet R2 M0010 Filter	2	9/3/20		125 mL HDPE Wide-Mouth Bottle	Particulate Filter (90 mm Whatman Glass Microfiber) Method 0010 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. Knoxville: Analyze for HFPO-DA.
GF-2530 VEN CB Inlet R2 M0010 FH of Filter Holder & Probe MeOH Rinse	2	9/3/20		125 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the Particulate Filter extraction.

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



Environment Testing
 TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2531 VEN CB Inlet R2 M0010 XAD-2 Resin Tube	2	9/3/20		XAD-2 Resin Tube	XAD-2 Resin Tube Method 0010 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. Knoxville: Analyze for HFPO-DA.
GF-2532 VEN CB Inlet R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	2	9/3/20		125 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Knoxville: Analyze for HFPO-DA.
GF-2533 VEN CB Inlet R2 M0010 Impingers 1,2 & 3 Condensate	2	9/3/20		500 mL HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate Method 0010 Train HFPO-DA Analysis	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. Knoxville: Analyze for HFPO-DA.
GF-2534 VEN CB Inlet R2 M0010 Impinger Glassware MeOH Rinse	2	9/3/20		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
GF-2535 VEN CB Inlet R2 M0010 Breakthrough XAD-2 Resin Tube	2	9/3/20		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 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. Knoxville: Analyze for HFPO-DA.
GF-2536 VEN CB Inlet R3 M0010 Filter	3	9/3/20		125 mL HDPE Wide-Mouth Bottle	Particulate Filter (90 mm Whatman Glass Microfiber) Method 0010 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. Knoxville: Analyze for HFPO-DA.

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



Environment Testing
 TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2537 VEN CB Inlet R3 M0010 FH of Filter Holder & Probe MeOH Rinse	3	9/3/20		125 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the Particulate Filter extraction.
GF-2538 VEN CB Inlet R3 M0010 XAD-2 Resin Tube	3	9/3/20		XAD-2 Resin Tube	XAD-2 Resin Tube Method 0010 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. Knoxville: Analyze for HFPO-DA.
GF-2539 VEN CB Inlet R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	3	9/3/20		125 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Knoxville: Analyze for HFPO-DA.
GF-2540 VEN CB Inlet R3 M0010 Impingers 1,2 & 3 Condensate	3	9/3/20		500 mL HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate Method 0010 Train HFPO-DA Analysis	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. Knoxville: Analyze for HFPO-DA.
GF-2541 VEN CB Inlet R3 M0010 Impinger Glassware MeOH Rinse	3	9/3/20		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
GF-2542 VEN CB Inlet R3 M0010 Breakthrough XAD-2 Resin Tube	3			XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 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. Knoxville: Analyze for HFPO-DA.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

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.

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

RT 1.2 / CT 1.2 °C

(3) Record any apparent sample loss/breakage.

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

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

HAND DELIVERED, NO CUSTOMER SEALS

Custody Transfer:

Relinquished By:	<u>Patricia M. Bales</u> Name	<u>Ramboll</u> Company	<u>9/3/20 2030</u> Date/Time
Accepted By:	<u>Doug Kelly</u> Name	<u>ETA KNOX</u> Company	<u>9/3/20 2030</u> Date/Time
Relinquished By:	<u>Doug Kelly</u> Name	<u>ETA KNOX</u> Company	<u>9/4/20 1235</u> Date/Time
Accepted By:	<u>Ryan [Signature]</u> Name	<u>ETA KNOX</u> Company	<u>9-4-20 1235</u> Date/Time
Relinquished By:	_____ Name	_____ Company	_____ Date/Time
Accepted By:	_____ Name	_____ Company	_____ Date/Time
Relinquished By:	_____ Name	_____ Company	_____ Date/Time
Accepted By:	_____ Name	_____ Company	_____ Date/Time

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	/			<input type="checkbox"/> Containers, Broken	
2. Were ambient air containers received intact?		/		<input type="checkbox"/> Checked in lab	
3. The coolers/containers custody seal if present, is it intact?		/		<input type="checkbox"/> Yes <input type="checkbox"/> NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6°C, VOST: 10°C) Thermometer ID : <u>5668</u> Correction factor: <u>0.0</u>	/			<input type="checkbox"/> Cooler Out of Temp, Client Contacted, Proceed/Cancel <input type="checkbox"/> Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?	/			<input type="checkbox"/> Containers, Broken	
6. Were samples received in appropriate containers?	/			<input type="checkbox"/> Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	/			<input type="checkbox"/> COC & Samples Do Not Match <input type="checkbox"/> COC Incorrect/Incomplete <input type="checkbox"/> COC Not Received	
8. Were all of the samples listed on the COC received?	/			<input type="checkbox"/> Sample Received, Not on COC <input type="checkbox"/> Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	/			<input type="checkbox"/> COC; No Date/Time; Client Contacted	Labeling Verified by: _____ Date: _____
10. Was the sampler identified on the COC?	/			<input type="checkbox"/> Sampler Not Listed on COC	pH test strip lot number: _____
11. Is the client and project name/# identified?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	/			<input type="checkbox"/> COC No tests on COC	
13. Is the matrix of the samples noted?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	/			<input type="checkbox"/> COC Incorrect/Incomplete	Box 16A: pH Preservation Box 18A: Residual Chlorine
15. Were samples received within holding time?	/			<input type="checkbox"/> Holding Time - Receipt	Preservative: _____
16. Were samples received with correct chemical preservative (excluding Encore)?	/			<input type="checkbox"/> pH Adjusted, pH Included (See box 16A) <input type="checkbox"/> Incorrect Preservative	Lot Number: _____ Exp Date: _____ Analyst: _____ Date: _____ Time: _____
17. Were VOA samples received without headspace?	/			<input type="checkbox"/> Headspace (VOA only) <input type="checkbox"/> Residual Chlorine	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____	/				
19. For 1613B water samples is pH<9?	/			<input type="checkbox"/> If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?	/			<input type="checkbox"/> Project missing info	
Project #: <u>14004326</u> PM Instructions: _____					

Sample Receiving Associate: [Signature] Date: 9-1-20 QA026R32.doc, 062719



VEN Carbon Bed Outlet Laboratory Data

ANALYTICAL REPORT

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

Laboratory Job ID: 140-20286-1
Client Project/Site: VEN CB Outlet - M0010

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:
9/21/2020 1:47:17 PM

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

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	7
Default Detection Limits	10
Isotope Dilution Summary	11
QC Sample Results	12
QC Association Summary	14
Lab Chronicle	16
Certification Summary	21
Method Summary	22
Sample Summary	23
Chain of Custody	24

Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

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

Case Narrative

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Job ID: 140-20286-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative 140-20286-1

Sample Receipt

The samples were received on September 4, 2020 at 12:35 PM in good condition and properly preserved. The temperature of the cooler at receipt was 1.7° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. COC not received by or relinquished by lab courier.

LCMS

Method 537 (modified): Results for samples GF-2554 VEN CB OUTLET R2 M0010 IMP 1,2&3 CONDENSATE (140-20286-7) 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 diluted to bring the concentration of target analytes within the calibration range: GF-2554 VEN CB OUTLET R2 M0010 IMP 1,2&3 CONDENSATE (140-20286-7). Elevated reporting limits (RLs) are provided.

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): GF-2543,2544 VEN CB OUTLET R1 M0010 FH (140-20286-1), GF-2550,2551 VEN CB OUTLET R2 M0010 FH (140-20286-5) and GF-2557,2558 VEN CB OUTLET R3 M0010 FH (140-20286-9). 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: GF-2543,2544 VEN CB OUTLET R1 M0010 FH (140-20286-1), GF-2550,2551 VEN CB OUTLET R2 M0010 FH (140-20286-5) and GF-2557,2558 VEN CB OUTLET R3 M0010 FH (140-20286-9). 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): GF-2545,2546,2548 VEN CB OUTLET R1 M0010 BH (140-20286-2), GF-2552,2553,2555 VEN CB OUTLET R2 M0010 BH (140-20286-6) and GF-2559,2560,2562 VEN CB OUTLET R3 M0010 BH (140-20286-10). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: GF-2545,2546,2548 VEN CB OUTLET R1 M0010 BH (140-20286-2), GF-2552,2553,2555 VEN CB OUTLET R2 M0010 BH (140-20286-6) and GF-2559,2560,2562 VEN CB OUTLET R3 M0010 BH (140-20286-10). 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 Outlet - M0010

Job ID: 140-20286-1

Client Sample ID: GF-2543,2544 VEN CB OUTLET R1 M0010 FH

Lab Sample ID: 140-20286-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	50.7		0.992	0.575	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2545,2546,2548 VEN CB OUTLET R1 M0010 BH

Lab Sample ID: 140-20286-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	9.87		0.320	0.280	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2547 VEN CB OUTLET R1 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20286-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.143		0.0620	0.0102	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2549 VEN CB OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20286-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0421		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2550,2551 VEN CB OUTLET R2 M0010 FH

Lab Sample ID: 140-20286-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	55.5		0.992	0.575	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2552,2553,2555 VEN CB OUTLET R2 M0010 BH

Lab Sample ID: 140-20286-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	38.5		1.60	1.40	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2554 VEN CB OUTLET R2 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20286-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	13.8		0.256	0.0423	ug/Sample	4		537 (modified)	Total/NA

Client Sample ID: GF-2556 VEN CB OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20286-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0813		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2557,2558 VEN CB OUTLET R3 M0010 FH

Lab Sample ID: 140-20286-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	63.4		1.00	0.580	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 - M0010

Job ID: 140-20286-1

**Client Sample ID: GF-2559,2560,2562 VEN CB OUTLET R3
M0010 BH**

Lab Sample ID: 140-20286-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.08		0.160	0.140	ug/Sample	1		537 (modified)	Total/NA

**Client Sample ID: GF-2561 VEN CB OUTLET R3 M0010 IMP
1,2&3 CONDENSATE**

Lab Sample ID: 140-20286-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0531	J	0.0590	0.00974	ug/Sample	1		537 (modified)	Total/NA

**Client Sample ID: GF-2563 VEN CB OUTLET R3 M0010
BREAKTHROUGH XAD-2 RESIN TUBE**

Lab Sample ID: 140-20286-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0109		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Client Sample ID: GF-2543,2544 VEN CB OUTLET R1 M0010

Lab Sample ID: 140-20286-1

FH

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	50.7		0.992	0.575	ug/Sample		09/09/20 11:52	09/16/20 15:46	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	102		25 - 150				09/09/20 11:52	09/16/20 15:46	1

Client Sample ID: GF-2545,2546,2548 VEN CB OUTLET R1

Lab Sample ID: 140-20286-2

M0010 BH

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	9.87		0.320	0.280	ug/Sample		09/08/20 09:30	09/18/20 14:30	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	87		25 - 150				09/08/20 09:30	09/18/20 14:30	1

Client Sample ID: GF-2547 VEN CB OUTLET R1 M0010 IMP

Lab Sample ID: 140-20286-3

1,2&3 CONDENSATE

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.143		0.0620	0.0102	ug/Sample		09/14/20 11:33	09/15/20 12:22	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	99		25 - 150				09/14/20 11:33	09/15/20 12:22	1

Client Sample ID: GF-2549 VEN CB OUTLET R1 M0010

Lab Sample ID: 140-20286-4

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0421		0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 14:39	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	71		25 - 150				09/08/20 09:30	09/18/20 14:39	1

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Client Sample ID: GF-2550,2551 VEN CB OUTLET R2 M0010

Lab Sample ID: 140-20286-5

FH

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	55.5		0.992	0.575	ug/Sample		09/09/20 11:52	09/16/20 15:55	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	97		25 - 150				09/09/20 11:52	09/16/20 15:55	1

Client Sample ID: GF-2552,2553,2555 VEN CB OUTLET R2

Lab Sample ID: 140-20286-6

M0010 BH

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	38.5		1.60	1.40	ug/Sample		09/08/20 09:30	09/18/20 14:49	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	96		25 - 150				09/08/20 09:30	09/18/20 14:49	1

Client Sample ID: GF-2554 VEN CB OUTLET R2 M0010 IMP

Lab Sample ID: 140-20286-7

1,2&3 CONDENSATE

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	13.8		0.256	0.0423	ug/Sample		09/14/20 11:33	09/15/20 12:31	4
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	103		25 - 150				09/14/20 11:33	09/15/20 12:31	4

Client Sample ID: GF-2556 VEN CB OUTLET R2 M0010

Lab Sample ID: 140-20286-8

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0813		0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 14:58	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	75		25 - 150				09/08/20 09:30	09/18/20 14:58	1

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Client Sample ID: GF-2557,2558 VEN CB OUTLET R3 M0010

Lab Sample ID: 140-20286-9

FH

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	63.4		1.00	0.580	ug/Sample		09/09/20 11:52	09/16/20 16:04	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	94		25 - 150				09/09/20 11:52	09/16/20 16:04	1

Client Sample ID: GF-2559,2560,2562 VEN CB OUTLET R3

Lab Sample ID: 140-20286-10

M0010 BH

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.08		0.160	0.140	ug/Sample		09/08/20 09:30	09/18/20 15:07	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	92		25 - 150				09/08/20 09:30	09/18/20 15:07	1

Client Sample ID: GF-2561 VEN CB OUTLET R3 M0010 IMP

Lab Sample ID: 140-20286-11

1,2&3 CONDENSATE

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0531	J	0.0590	0.00974	ug/Sample		09/14/20 11:33	09/15/20 12:40	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	102		25 - 150				09/14/20 11:33	09/15/20 12:40	1

Client Sample ID: GF-2563 VEN CB OUTLET R3 M0010

Lab Sample ID: 140-20286-12

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0109		0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 15:15	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	77		25 - 150				09/08/20 09:30	09/18/20 15:15	1

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

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

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA (25-150)	
140-20286-1	GF-2543,2544 VEN CB OUTLE	102	
140-20286-2	GF-2545,2546,2548 VEN CB OUTLET R1 M0010 BH	87	
140-20286-3	GF-2547 VEN CB OUTLET R1 M0010 IMP 1,2&3 CONDENSATE	99	
140-20286-4	GF-2549 VEN CB OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	71	
140-20286-5	GF-2550,2551 VEN CB OUTLE	97	
140-20286-6	R2 M0010 FH GF-2552,2553,2555 VEN CB OUTLET R2 M0010 BH	96	
140-20286-7	GF-2554 VEN CB OUTLET R2 M0010 IMP 1,2&3 CONDENSATE	103	
140-20286-8	GF-2556 VEN CB OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	75	
140-20286-9	GF-2557,2558 VEN CB OUTLE	94	
140-20286-10	R3 M0010 FH GF-2559,2560,2562 VEN CB OUTLET R3 M0010 BH	92	
140-20286-11	GF-2561 VEN CB OUTLET R3 M0010 IMP 1,2&3 CONDENSATE	102	
140-20286-12	GF-2563 VEN CB OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	77	
LCS 140-42523/2-B	Lab Control Sample	55	
LCS 140-42561/2-B	Lab Control Sample	87	
LCS 140-42711/2-B	Lab Control Sample	97	
LCSD 140-42523/3-B	Lab Control Sample Dup	64	
LCSD 140-42561/3-B	Lab Control Sample Dup	83	
LCSD 140-42711/3-B	Lab Control Sample Dup	103	
MB 140-42523/1-B	Method Blank	51	
MB 140-42561/1-B	Method Blank	85	
MB 140-42711/1-B	Method Blank	99	

Surrogate Legend

HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-42523/1-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42523

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 13:55	1
Isotope Dilution	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C3 HFPO-DA	51		25 - 150				09/08/20 09:30	09/18/20 13:55	1

Lab Sample ID: LCS 140-42523/2-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42523

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.01854		ug/Sample		93	60 - 140
Isotope Dilution	%Recovery	LCS Qualifier	Limits				
¹³ C3 HFPO-DA	55		25 - 150				

Lab Sample ID: LCSD 140-42523/3-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42523

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0200	0.01662		ug/Sample		83	60 - 140	11	30
Isotope Dilution	%Recovery	LCSD Qualifier	Limits						
¹³ C3 HFPO-DA	64		25 - 150						

Lab Sample ID: MB 140-42561/1-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 15:11	1
Isotope Dilution	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C3 HFPO-DA	85		25 - 150				09/09/20 11:52	09/16/20 15:11	1

Lab Sample ID: LCS 140-42561/2-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42561

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.01768		ug/Sample		88	60 - 140
Isotope Dilution	%Recovery	LCS Qualifier	Limits				
¹³ C3 HFPO-DA	87		25 - 150				

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

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

Lab Sample ID: LCSD 140-42561/3-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42561

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0200	0.01792		ug/Sample		90	60 - 140	1	30
		LCSD	LCSD						
Isotope Dilution	%Recovery	Qualifier	Limits						
13C3 HFPO-DA	83		25 - 150						

Lab Sample ID: MB 140-42711/1-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:47	1
		MB	MB						
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C3 HFPO-DA	99		25 - 150	09/14/20 11:33	09/15/20 11:47	1			

Lab Sample ID: LCS 140-42711/2-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42711

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA	0.0100	0.009984		ug/Sample		100	60 - 140		
		LCS	LCS						
Isotope Dilution	%Recovery	Qualifier	Limits						
13C3 HFPO-DA	97		25 - 150						

Lab Sample ID: LCSD 140-42711/3-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42711

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0100	0.009072		ug/Sample		91	60 - 140	10	30
		LCSD	LCSD						
Isotope Dilution	%Recovery	Qualifier	Limits						
13C3 HFPO-DA	103		25 - 150						

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

LCMS

Prep Batch: 42523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-2	GF-2545,2546,2548 VEN CB OUTLET R1 M0010	Total/NA	Air	None	
140-20286-4	GF-2549 VEN CB OUTLET R1 M0010 BREAKTH	Total/NA	Air	None	
140-20286-6	GF-2552,2553,2555 VEN CB OUTLET R2 M0010	Total/NA	Air	None	
140-20286-8	GF-2556 VEN CB OUTLET R2 M0010 BREAKTH	Total/NA	Air	None	
140-20286-10	GF-2559,2560,2562 VEN CB OUTLET R3 M0010	Total/NA	Air	None	
140-20286-12	GF-2563 VEN CB OUTLET R3 M0010 BREAKTH	Total/NA	Air	None	
MB 140-42523/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 42561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-1	GF-2543,2544 VEN CB OUTLET R1 M0010 FH	Total/NA	Air	None	
140-20286-5	GF-2550,2551 VEN CB OUTLET R2 M0010 FH	Total/NA	Air	None	
140-20286-9	GF-2557,2558 VEN CB OUTLET R3 M0010 FH	Total/NA	Air	None	
MB 140-42561/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-2	GF-2545,2546,2548 VEN CB OUTLET R1 M0010	Total/NA	Air	Split	42523
140-20286-4	GF-2549 VEN CB OUTLET R1 M0010 BREAKTH	Total/NA	Air	Split	42523
140-20286-6	GF-2552,2553,2555 VEN CB OUTLET R2 M0010	Total/NA	Air	Split	42523
140-20286-8	GF-2556 VEN CB OUTLET R2 M0010 BREAKTH	Total/NA	Air	Split	42523
140-20286-10	GF-2559,2560,2562 VEN CB OUTLET R3 M0010	Total/NA	Air	Split	42523
140-20286-12	GF-2563 VEN CB OUTLET R3 M0010 BREAKTH	Total/NA	Air	Split	42523
MB 140-42523/1-B	Method Blank	Total/NA	Air	Split	42523
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	Split	42523
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42523

Cleanup Batch: 42591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-1	GF-2543,2544 VEN CB OUTLET R1 M0010 FH	Total/NA	Air	Split	42561
140-20286-5	GF-2550,2551 VEN CB OUTLET R2 M0010 FH	Total/NA	Air	Split	42561
140-20286-9	GF-2557,2558 VEN CB OUTLET R3 M0010 FH	Total/NA	Air	Split	42561
MB 140-42561/1-B	Method Blank	Total/NA	Air	Split	42561
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	Split	42561
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42561

Prep Batch: 42711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-3	GF-2547 VEN CB OUTLET R1 M0010 IMP 1,2&3	Total/NA	Air	None	
140-20286-7	GF-2554 VEN CB OUTLET R2 M0010 IMP 1,2&3	Total/NA	Air	None	
140-20286-11	GF-2561 VEN CB OUTLET R3 M0010 IMP 1,2&3	Total/NA	Air	None	
MB 140-42711/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	None	

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

LCMS

Cleanup Batch: 42725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-3	GF-2547 VEN CB OUTLET R1 M0010 IMP 1,2&3	Total/NA	Air	Split	42711
140-20286-7	GF-2554 VEN CB OUTLET R2 M0010 IMP 1,2&3	Total/NA	Air	Split	42711
140-20286-11	GF-2561 VEN CB OUTLET R3 M0010 IMP 1,2&3	Total/NA	Air	Split	42711
MB 140-42711/1-B	Method Blank	Total/NA	Air	Split	42711
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	Split	42711
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42711

Analysis Batch: 42757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-3	GF-2547 VEN CB OUTLET R1 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	42725
140-20286-7	GF-2554 VEN CB OUTLET R2 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	42725
140-20286-11	GF-2561 VEN CB OUTLET R3 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	42725
MB 140-42711/1-B	Method Blank	Total/NA	Air	537 (modified)	42725
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42725
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42725

Cleanup Batch: 42822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-1	GF-2543,2544 VEN CB OUTLET R1 M0010 FH	Total/NA	Air	Dilution	42591
140-20286-5	GF-2550,2551 VEN CB OUTLET R2 M0010 FH	Total/NA	Air	Dilution	42591
140-20286-9	GF-2557,2558 VEN CB OUTLET R3 M0010 FH	Total/NA	Air	Dilution	42591

Analysis Batch: 42824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-1	GF-2543,2544 VEN CB OUTLET R1 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20286-5	GF-2550,2551 VEN CB OUTLET R2 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20286-9	GF-2557,2558 VEN CB OUTLET R3 M0010 FH	Total/NA	Air	537 (modified)	42822
MB 140-42561/1-B	Method Blank	Total/NA	Air	537 (modified)	42591
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42591
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42591

Cleanup Batch: 42906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-2	GF-2545,2546,2548 VEN CB OUTLET R1 M0010	Total/NA	Air	Dilution	42590
140-20286-6	GF-2552,2553,2555 VEN CB OUTLET R2 M0010	Total/NA	Air	Dilution	42590
140-20286-10	GF-2559,2560,2562 VEN CB OUTLET R3 M0010	Total/NA	Air	Dilution	42590

Analysis Batch: 42907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20286-2	GF-2545,2546,2548 VEN CB OUTLET R1 M0010	Total/NA	Air	537 (modified)	42906
140-20286-4	GF-2549 VEN CB OUTLET R1 M0010 BREAKTH	Total/NA	Air	537 (modified)	42590
140-20286-6	GF-2552,2553,2555 VEN CB OUTLET R2 M0010	Total/NA	Air	537 (modified)	42906
140-20286-8	GF-2556 VEN CB OUTLET R2 M0010 BREAKTH	Total/NA	Air	537 (modified)	42590
140-20286-10	GF-2559,2560,2562 VEN CB OUTLET R3 M0010	Total/NA	Air	537 (modified)	42906
140-20286-12	GF-2563 VEN CB OUTLET R3 M0010 BREAKTH	Total/NA	Air	537 (modified)	42590
MB 140-42523/1-B	Method Blank	Total/NA	Air	537 (modified)	42590
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42590
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42590

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Client Sample ID: GF-2543,2544 VEN CB OUTLET R1 M0010 FH

Lab Sample ID: 140-20286-1

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	119 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			60 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			10 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:46	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2545,2546,2548 VEN CB OUTLET R1 M0010 BH

Lab Sample ID: 140-20286-2

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Cleanup	Dilution			50 uL	10000 uL	42906	09/18/20 12:20	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:30	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2547 VEN CB OUTLET R1 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20286-3

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00806 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:22	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2549 VEN CB OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20286-4

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:39	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Client Sample ID: GF-2550,2551 VEN CB OUTLET R2 M0010 FH

Lab Sample ID: 140-20286-5

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	127 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			64 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			10 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:55	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2552,2553,2555 VEN CB OUTLET R2 M0010 BH

Lab Sample ID: 140-20286-6

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Cleanup	Dilution			10 uL	10000 uL	42906	09/18/20 12:20	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:49	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2554 VEN CB OUTLET R2 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20286-7

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00781 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		4			42757	09/15/20 12:31	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2556 VEN CB OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20286-8

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:58	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Client Sample ID: GF-2557,2558 VEN CB OUTLET R3 M0010 FH

Lab Sample ID: 140-20286-9

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	122 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			61 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			10 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 16:04	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2559,2560,2562 VEN CB OUTLET R3 M0010 BH

Lab Sample ID: 140-20286-10

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42906	09/18/20 12:20	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 15:07	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2561 VEN CB OUTLET R3 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20286-11

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00847 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:40	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2563 VEN CB OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20286-12

Date Collected: 09/03/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 15:15	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42523/1-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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 13:55	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42561/1-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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:11	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42711/1-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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:47	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42523/2-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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:13	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42561/2-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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:29	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42711/2-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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:05	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42523/3-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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:21	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42561/3-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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:38	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42711/3-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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:14	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
 Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

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
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-21
Colorado	State	TN00009	02-28-21
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	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	LA110001	12-31-12 *
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-21
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
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	01-19-21
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN CB Outlet - M0010

Job ID: 140-20286-1

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 - M0010

Job ID: 140-20286-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-20286-1	GF-2543,2544 VEN CB OUTLET R1 M0010 FH	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-2	GF-2545,2546,2548 VEN CB OUTLET R1 M0010 BH	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-3	GF-2547 VEN CB OUTLET R1 M0010 IMP 1,2&3 CONDENSATE	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-4	GF-2549 VEN CB OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-5	GF-2550,2551 VEN CB OUTLET R2 M0010 FH	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-6	GF-2552,2553,2555 VEN CB OUTLET R2 M0010 BH	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-7	GF-2554 VEN CB OUTLET R2 M0010 IMP 1,2&3 CONDENSATE	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-8	GF-2556 VEN CB OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-9	GF-2557,2558 VEN CB OUTLET R3 M0010 FH	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-10	GF-2559,2560,2562 VEN CB OUTLET R3 M0010 BH	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-11	GF-2561 VEN CB OUTLET R3 M0010 IMP 1,2&3 CONDENSATE	Air	09/03/20 00:00	09/04/20 12:35	
140-20286-12	GF-2563 VEN CB OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/03/20 00:00	09/04/20 12:35	

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



Environment Testing
 TestAmerica

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 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 Name" in all TALS Reports.

Analytical Parameter:	Holding Time Requirements:
HFPO-DA (CAS No. 13252-13-6)	14 Days to Extraction; 40 Days to Analysis



Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2543 VEN CB Outlet R1 M0010 Filter	1	9/3/20		125 mL HDPE Wide-Mouth Bottle	Particulate Filter (90 mm Whatman Glass Microfiber) Method 0010 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. Knoxville: Analyze for HFPO-DA.
GF-2544 VEN CB Outlet R1 M0010 FH of Filter Holder & Probe MeOH Rinse	1	9/3/20		125 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the Particulate Filter extraction.
GF-2545 VEN CB Outlet R1 M0010 XAD-2 Resin Tube	1	9/3/20		XAD-2 Resin Tube	XAD-2 Resin Tube Method 0010 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. Knoxville: Analyze for HFPO-DA.

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



Environment Testing
 TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2546 VEN CB Outlet R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	1	9/3/20		125 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. <u>Knoxville:</u> Analyze for HFPO-DA.
GF-2547 VEN CB Outlet R1 M0010 Impingers 1,2 & 3 Condensate	1	9/3/20		500 mL HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. <u>Knoxville:</u> Analyze for HFPO-DA.
GF-2548 VEN CB Outlet R1 M0010 Impinger Glassware MeOH Rinse	1	9/3/20		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> Use this solvent sample in the XAD-2 Resin Extraction.
GF-2549 VEN CB Outlet R1 M0010 Breakthrough XAD-2 Resin Tube	1	9/3/20		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. <u>Knoxville:</u> Analyze for HFPO-DA.
GF-2550 VEN CB Outlet R2 M0010 Filter	2	9/3/20		125 mL HDPE Wide-Mouth Bottle	Particulate Filter (90 mm Whatman Glass Microfiber) Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> 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. <u>Knoxville:</u> Analyze for HFPO-DA.
GF-2551 VEN CB Outlet R2 M0010 FH of Filter Holder & Probe MeOH Rinse	2	9/3/20		125 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> Use this solvent sample in the Particulate Filter extraction.

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



Environment Testing
 TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2552 VEN CB Outlet R2 M0010 XAD-2 Resin Tube	2	9/3/20		XAD-2 Resin Tube	XAD-2 Resin Tube Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> 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. <u>Knoxville:</u> Analyze for HFPO-DA.
GF-2553 VEN CB Outlet R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	2	9/3/20		125 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. <u>Knoxville:</u> Analyze for HFPO-DA.
GF-2554 VEN CB Outlet R2 M0010 Impingers 1,2 & 3 Condensate	2	9/3/20		500 mL HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. <u>Knoxville:</u> Analyze for HFPO-DA.
GF-2555 VEN CB Outlet R2 M0010 Impinger Glassware MeOH Rinse	2	9/3/20		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> Use this solvent sample in the XAD-2 Resin Extraction.
GF-2556 VEN CB Outlet R2 M0010 Breakthrough XAD-2 Resin Tube	2	9/3/20		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. <u>Knoxville:</u> Analyze for HFPO-DA.
GF-2557 VEN CB Outlet R3 M0010 Filter	3	9/3/20		125 mL HDPE Wide-Mouth Bottle	Particulate Filter (90 mm Whatman Glass Microfiber) Method 0010 Train HFPO-DA Analysis	<u>Knoxville:</u> 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. <u>Knoxville:</u> Analyze for HFPO-DA.

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



Environment Testing
 TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2558 VEN CB Outlet R3 M0010 FH of Filter Holder & Probe MeOH Rinse	3	9/3/20		125 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the Particulate Filter extraction.
GF-2559 VEN CB Outlet R3 M0010 XAD-2 Resin Tube	3	9/3/20		XAD-2 Resin Tube	XAD-2 Resin Tube Method 0010 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. Knoxville: Analyze for HFPO-DA.
GF-2560 VEN CB Outlet R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	3	9/3/20		125 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Knoxville: Analyze for HFPO-DA.
GF-2561 VEN CB Outlet R3 M0010 Impingers 1, 2 & 3 Condensate	3	9/3/20		500 mL HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate Method 0010 Train HFPO-DA Analysis	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. Knoxville: Analyze for HFPO-DA.
GF-2562 VEN CB Outlet R3 M0010 Impinger Glassware MeOH Rinse	3	9/3/20		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
GF-2563 VEN CB Outlet R3 M0010 Breakthrough XAD-2 Resin Tube	3	9/3/20		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 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. Knoxville: Analyze for HFPO-DA.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

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 1.7 / 67.7°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): HAND DELIVERED, NO CUSTODY SEALS

Custody Transfer:

Relinquished By:	<u>Patricia Moody</u> Name	<u>Rimboll</u> Company	<u>9/2/20</u> Date/Time
Accepted By:	<u>[Signature]</u> Name	<u>ETA Kvx</u> Company	<u>9-4-20 12:35</u> Date/Time
Relinquished By:	_____ Name	_____ Company	_____ Date/Time
Accepted By:	_____ Name	_____ Company	_____ Date/Time
Relinquished By:	_____ Name	_____ Company	_____ Date/Time
Accepted By:	_____ Name	_____ Company	_____ Date/Time
Relinquished By:	_____ Name	_____ Company	_____ Date/Time
Accepted By:	_____ Name	_____ Company	_____ Date/Time

QA/QC Laboratory Data

ANALYTICAL REPORT

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

Laboratory Job ID: 140-20292-1

Client Project/Site: August Field QC Samples - M0010

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:
9/21/2020 3:01:54 PM

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

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	6
Default Detection Limits	8
Isotope Dilution Summary	9
QC Sample Results	10
QC Association Summary	13
Lab Chronicle	15
Certification Summary	20
Method Summary	21
Sample Summary	22
Chain of Custody	23

Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Qualifiers

LCMS

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

Case Narrative

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Job ID: 140-20292-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative 140-20292-1

Sample Receipt

The samples were received on September 4, 2020 at 12:35 PM in good condition and properly preserved.. The temperature of the cooler at receipt was 1.1° C.

LCMS

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): GF-2564,2565 QC VEN CB M0010 FH BT (140-20292-1). 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: GF-2564,2565 QC VEN CB M0010 FH BT (140-20292-1). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples GF-2566,2567,2569 QC VEN CB M0010 BH BT (140-20292-2) 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: GF-2566,2567,2569 QC VEN CB M0010 BH BT (140-20292-2). 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: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: GF-2564,2565 QC VEN CB M0010 FH BT

Lab Sample ID: 140-20292-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.804		0.100	0.0580	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2566,2567,2569 QC VEN CB M0010 BH BT

Lab Sample ID: 140-20292-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.31		0.0800	0.0700	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT

Lab Sample ID: 140-20292-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00911	B	0.000500	0.0000825	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT

Lab Sample ID: 140-20292-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00476		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB

Lab Sample ID: 140-20292-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.000180	J B	0.000500	0.0000825	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB

Lab Sample ID: 140-20292-6

No Detections.

Client Sample ID: GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-20292-7

No Detections.

Client Sample ID: A-7162, MEDIA CHECK XAD

Lab Sample ID: 140-20292-8

No Detections.

Client Sample ID: A-7163, MEDIA CHECK FILTER

Lab Sample ID: 140-20292-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.000653	J	0.00100	0.000580	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: GF-2564,2565 QC VEN CB M0010 FH BT

Lab Sample ID: 140-20292-1

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.804		0.100	0.0580	ug/Sample		09/09/20 11:52	09/16/20 19:00	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	95		25 - 150				09/09/20 11:52	09/16/20 19:00	1

Client Sample ID: GF-2566,2567,2569 QC VEN CB M0010 BH

Lab Sample ID: 140-20292-2

BT

Matrix: Air

Date Collected: 09/01/20 00:00

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.31		0.0800	0.0700	ug/Sample		09/09/20 15:03	09/18/20 17:01	50
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	94		25 - 150				09/09/20 15:03	09/18/20 17:01	50

Client Sample ID: GF-2568 QC VEN CB M0010 IMP 1,2&3

Lab Sample ID: 140-20292-3

CONDENSATE BT

Matrix: Air

Date Collected: 09/01/20 00:00

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00911	B	0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 16:13	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	107		25 - 150				09/14/20 11:33	09/15/20 16:13	1

Client Sample ID: GF-2570 QC VEN CB M0010

Lab Sample ID: 140-20292-4

BREAKTHROUGH XAD-2 RESIN TUBE BT

Matrix: Air

Date Collected: 09/01/20 00:00

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00476		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 17:27	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	44		25 - 150				09/09/20 15:03	09/18/20 17:27	1

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB

Lab Sample ID: 140-20292-5

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.000180	J B	0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 15:45	1

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB
 Date Collected: 09/01/20 00:00
 Date Received: 09/04/20 12:35
 Sample Container: Air Train

Lab Sample ID: 140-20292-5
 Matrix: Air

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	97		25 - 150	09/14/20 11:33	09/15/20 15:45	1

Client Sample ID: GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB
 Date Collected: 09/01/20 00:00
 Date Received: 09/04/20 12:35
 Sample Container: Air Train

Lab Sample ID: 140-20292-6
 Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 17:38	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C3 HFPO-DA	89		25 - 150	09/09/20 15:03	09/18/20 17:38	1			

Client Sample ID: GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB
 Date Collected: 09/01/20 00:00
 Date Received: 09/04/20 12:35
 Sample Container: Air Train

Lab Sample ID: 140-20292-7
 Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 17:47	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C3 HFPO-DA	82		25 - 150	09/09/20 15:03	09/18/20 17:47	1			

Client Sample ID: A-7162, MEDIA CHECK XAD
 Date Collected: 09/01/20 00:00
 Date Received: 09/04/20 12:35
 Sample Container: Air Train

Lab Sample ID: 140-20292-8
 Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 17:55	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C3 HFPO-DA	83		25 - 150	09/09/20 15:03	09/18/20 17:55	1			

Client Sample ID: A-7163, MEDIA CHECK FILTER
 Date Collected: 09/01/20 00:00
 Date Received: 09/04/20 12:35
 Sample Container: Air Train

Lab Sample ID: 140-20292-9
 Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.000653	J	0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 19:09	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C3 HFPO-DA	86		25 - 150	09/09/20 11:52	09/16/20 19:09	1			

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

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

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

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)
140-20292-1	GF-2564,2565 QC VEN CB M0C	95
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	94
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT	107
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESI TUBE BT	44
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	97
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB	89
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PI	82
140-20292-8	A-7162, MEDIA CHECK XAD	83
140-20292-9	A-7163, MEDIA CHECK FILTER	86
LCS 140-42561/2-B	Lab Control Sample	87
LCS 140-42567/2-B	Lab Control Sample	49
LCS 140-42711/2-B	Lab Control Sample	97
LCSD 140-42561/3-B	Lab Control Sample Dup	83
LCSD 140-42567/3-B	Lab Control Sample Dup	51
LCSD 140-42711/3-B	Lab Control Sample Dup	103
MB 140-42561/14-B	Method Blank	88
MB 140-42561/1-B	Method Blank	85
MB 140-42567/1-B	Method Blank	38
MB 140-42711/14-B	Method Blank	95
MB 140-42711/1-B	Method Blank	99

Surrogate Legend

HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-42561/14-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 15:20	1
Isotope Dilution	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	88		25 - 150				09/09/20 11:52	09/16/20 15:20	1

Lab Sample ID: MB 140-42561/1-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 15:11	1
Isotope Dilution	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	85		25 - 150				09/09/20 11:52	09/16/20 15:11	1

Lab Sample ID: LCS 140-42561/2-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42561

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.01768		ug/Sample		88	60 - 140
Isotope Dilution	%Recovery	LCS Qualifier	Limits				
13C3 HFPO-DA	87		25 - 150				

Lab Sample ID: LCSD 140-42561/3-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42561

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
HFPO-DA	0.0200	0.01792		ug/Sample		90	60 - 140	1	30
Isotope Dilution	%Recovery	LCSD Qualifier	Limits						
13C3 HFPO-DA	83		25 - 150						

Lab Sample ID: MB 140-42567/1-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42567

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 16:35	1
Isotope Dilution	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	38		25 - 150				09/09/20 15:03	09/18/20 16:35	1

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

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

Lab Sample ID: LCS 140-42567/2-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42567

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.01792		ug/Sample		90	60 - 140
<i>Isotope Dilution</i>		<i>%Recovery</i>	<i>Qualifier</i>				<i>Limits</i>
13C3 HFPO-DA		49					25 - 150

Lab Sample ID: LCSD 140-42567/3-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42567

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0200	0.01577		ug/Sample		79	60 - 140	13	30
<i>Isotope Dilution</i>		<i>%Recovery</i>	<i>Qualifier</i>				<i>Limits</i>		
13C3 HFPO-DA		51					25 - 150		

Lab Sample ID: MB 140-42711/14-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0001444	J	0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:56	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	95		25 - 150				09/14/20 11:33	09/15/20 11:56	1

Lab Sample ID: MB 140-42711/1-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:47	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	99		25 - 150				09/14/20 11:33	09/15/20 11:47	1

Lab Sample ID: LCS 140-42711/2-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42711

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0100	0.009984		ug/Sample		100	60 - 140
<i>Isotope Dilution</i>		<i>%Recovery</i>	<i>Qualifier</i>				<i>Limits</i>
13C3 HFPO-DA		97					25 - 150

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

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

Lab Sample ID: LCSD 140-42711/3-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42711

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0100	0.009072		ug/Sample		91	60 - 140	10	30
		<i>LCSD</i>	<i>LCSD</i>						
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>						
<i>13C3 HFPO-DA</i>	<i>103</i>		<i>25 - 150</i>						

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

LCMS

Prep Batch: 42561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Total/NA	Air	None	
140-20292-9	A-7163, MEDIA CHECK FILTER	Total/NA	Air	None	
MB 140-42561/14-B	Method Blank	Total/NA	Air	None	
MB 140-42561/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 42567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	Total/NA	Air	None	
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH	Total/NA	Air	None	
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/N	Total/NA	Air	None	
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLAS	Total/NA	Air	None	
140-20292-8	A-7162, MEDIA CHECK XAD	Total/NA	Air	None	
MB 140-42567/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42567/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42567/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Total/NA	Air	Split	42561
140-20292-9	A-7163, MEDIA CHECK FILTER	Total/NA	Air	Split	42561
MB 140-42561/14-B	Method Blank	Total/NA	Air	Split	42561
MB 140-42561/1-B	Method Blank	Total/NA	Air	Split	42561
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	Split	42561
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42561

Cleanup Batch: 42704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	Total/NA	Air	Split	42567
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH	Total/NA	Air	Split	42567
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/N	Total/NA	Air	Split	42567
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLAS	Total/NA	Air	Split	42567
140-20292-8	A-7162, MEDIA CHECK XAD	Total/NA	Air	Split	42567
MB 140-42567/1-B	Method Blank	Total/NA	Air	Split	42567
LCS 140-42567/2-B	Lab Control Sample	Total/NA	Air	Split	42567
LCSD 140-42567/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42567

Prep Batch: 42711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDE	Total/NA	Air	None	
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	Total/NA	Air	None	
MB 140-42711/14-B	Method Blank	Total/NA	Air	None	
MB 140-42711/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDE	Total/NA	Air	Split	42711
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	Total/NA	Air	Split	42711

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

LCMS (Continued)

Cleanup Batch: 42725 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-42711/14-B	Method Blank	Total/NA	Air	Split	42711
MB 140-42711/1-B	Method Blank	Total/NA	Air	Split	42711
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	Split	42711
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42711

Analysis Batch: 42757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDE	Total/NA	Air	537 (modified)	42725
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	Total/NA	Air	537 (modified)	42725
MB 140-42711/14-B	Method Blank	Total/NA	Air	537 (modified)	42725
MB 140-42711/1-B	Method Blank	Total/NA	Air	537 (modified)	42725
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42725
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42725

Cleanup Batch: 42822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Total/NA	Air	Dilution	42591

Analysis Batch: 42824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Total/NA	Air	537 (modified)	42822
140-20292-9	A-7163, MEDIA CHECK FILTER	Total/NA	Air	537 (modified)	42591
MB 140-42561/14-B	Method Blank	Total/NA	Air	537 (modified)	42591
MB 140-42561/1-B	Method Blank	Total/NA	Air	537 (modified)	42591
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42591
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42591

Analysis Batch: 42907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	Total/NA	Air	537 (modified)	42704
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH	Total/NA	Air	537 (modified)	42704
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/N	Total/NA	Air	537 (modified)	42704
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLAS	Total/NA	Air	537 (modified)	42704
140-20292-8	A-7162, MEDIA CHECK XAD	Total/NA	Air	537 (modified)	42704
MB 140-42567/1-B	Method Blank	Total/NA	Air	537 (modified)	42704
LCS 140-42567/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42704
LCSD 140-42567/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42704

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: GF-2564,2565 QC VEN CB M0010 FH BT

Lab Sample ID: 140-20292-1

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:33	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 19:00	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: GF-2566,2567,2569 QC VEN CB M0010 BH

Lab Sample ID: 140-20292-2

BT

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			42907	09/18/20 17:01	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: GF-2568 QC VEN CB M0010 IMP 1,2&3

Lab Sample ID: 140-20292-3

CONDENSATE BT

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 16:13	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: GF-2570 QC VEN CB M0010

Lab Sample ID: 140-20292-4

BREAKTHROUGH XAD-2 RESIN TUBE BT

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 17:27	JRC	TAL KNX

Instrument ID: LCA

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB

Lab Sample ID: 140-20292-5

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 15:45	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB

Lab Sample ID: 140-20292-6

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 17:38	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-20292-7

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 17:47	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: A-7162, MEDIA CHECK XAD

Lab Sample ID: 140-20292-8

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 17:55	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: A-7163, MEDIA CHECK FILTER

Lab Sample ID: 140-20292-9

Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35

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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 19:09	JRC	TAL KNX
Instrument ID: LCA										

Eurofins TestAmerica, Knoxville

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42561/14-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:20	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42561/1-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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:11	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42567/1-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	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 16:35	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42711/14-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:56	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42711/1-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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:47	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42561/2-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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:29	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42567/2-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	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 16:43	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42711/2-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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:05	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42561/3-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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:38	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42567/3-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	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 16:52	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42711/3-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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:14	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
 Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

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
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-21
Colorado	State	TN00009	02-28-21
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	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	LA110001	12-31-12 *
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-21
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
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	01-19-21
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

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: August Field QC Samples - M0010

Job ID: 140-20292-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-8	A-7162, MEDIA CHECK XAD	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-9	A-7163, MEDIA CHECK FILTER	Air	09/01/20 00:00	09/04/20 12:35	

Request for Analysis/Chain-of-Custody – RFA/COC #003
The Chemours Company – Fayetteville NC Facility
HFPO-DA Testing on VEN Carbon Bed Field QC Samples



Environment Testing
 TestAmerica

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

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

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: HFPO-DA (CAS No. 13252-13-6)	Holding Time Requirements: 14 Days to Extraction; 40 Days to Analysis	Preservation Requirements:
--	---	-----------------------------------



Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2564 QC VEN CB M0010 Filter BT	QC	9/1/20	Blank Train	125 mL HDPE Wide- Mouth Bottle	Particulate Filter (90 mm Whatman Glass Microfiber) Method 0010 Blank 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. Knoxville: Analyze for HFPO-DA.
GF-2565 QC VEN CB M0010 FH of Filter Holder & Probe MeOH Rinse BT	QC	9/1/20	Blank Train	125 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse Method 0010 Blank Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the Particulate Filter extraction.
GF-2566 QC VEN CB M0010 XAD-2 Resin Tube BT	QC	9/1/20	Blank Train	XAD-2 Resin Tube	XAD-2 Resin Tube Method 0010 Blank 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. Knoxville: Analyze for HFPO-DA.

Request for Analysis/Chain-of-Custody – RFA/COC #003
The Chemours Company – Fayetteville NC Facility
HFPO-DA Testing on VEN Carbon Bed Field QC Samples



Environment Testing
 TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2567 QC VEN CB M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT	QC	9/1/20	Blank Train	125 mL HDPE Wide- Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse Method 0010 Blank Train HFPO-DA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Knoxville: Analyze for HFPO-DA.
GF-2568 QC VEN CB M0010 Impingers 1,2 & 3 Condensate BT	QC	9/1/20	Blank Train	500 mL HDPE Wide- Mouth Bottle	Impinger #1, #2 & #3 Condensate Method 0010 Blank Train HFPO-DA Analysis	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. Knoxville: Analyze for HFPO-DA.
GF-2569 QC VEN CB M0010 Impinger Glassware MeOH Rinse BT	QC	9/1/20	Blank Train	250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse Method 0010 Blank Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
GF-2570 QC VEN CB M0010 Breakthrough XAD-2 Resin Tube BT	QC	9/1/20	Blank Train	XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 Blank 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. Knoxville: Analyze for HFPO-DA.
GF-2571 QC VEN CB M0010 DI Water RB	QC	9/1/20	Reagent Blank	500 mL HDPE Wide- Mouth Bottle	Deionized (DI) Water Reagent Blank Method 0010 Train HFPO-DA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Knoxville: Analyze for HFPO-DA.
GF-2572 QC VEN CB M0010 MeOH with 5% NH ₄ OH RB	QC	9/1/20	Reagent Blank	250 mL HDPE Wide- Mouth Bottle	Methanol with 5% NH₄OH Reagent Blank Method 0010 Train HFPO-DA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Knoxville: Analyze for HFPO-DA.

Request for Analysis/Chain-of-Custody – RFA/COC #003
 The Chemours Company – Fayetteville NC Facility
 HFPO-DA Testing on VEN Carbon Bed Field QC Samples



Environment Testing
 TestAmerica

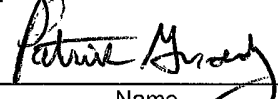
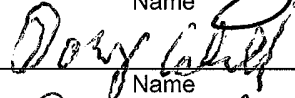


Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2573 QC VEN CB M0010 Combined Glassware Rinses (MeOH/5% NH ₄ OH) PB	QC	9/1/20	Proof Blank	125 mL HDPE Wide- Mouth Bottle	Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank Method 0010 Train HFPO-DA Analysis	<u>Knoxville</u> : Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. <u>Knoxville</u> : Analyze for HFPO-DA.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

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 1.1/CT 1.1°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 AND CUSTODY SEALS

Custody Transfer:

Relinquished By:	 Name	Ramboll Company	9/3/20 2030 Date/Time
Accepted By:	 Name	ETA KNOX Company	9/3/20 2030 Date/Time
Relinquished By:	 Name	ETA KNOX Company	9/4/20 1235 Date/Time
Accepted By:	 Name	ETA KNOX Company	9-4-20 12:35 Date/Time
Relinquished By:	Name	Company	Date/Time
Accepted By:	Name	Company	Date/Time
Relinquished By:	Name	Company	Date/Time
Accepted By:	Name	Company	Date/Time

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

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	/			<input type="checkbox"/> Containers, Broken	
2. Were ambient air containers received intact?			/	<input type="checkbox"/> Checked in lab	
3. The coolers/containers custody seal if present, is it intact?			/	<input type="checkbox"/> Yes <input type="checkbox"/> NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6°C, VOST: 10°C) Thermometer ID: <u>SL68</u> Correction factor: <u>0.0</u>	/			<input type="checkbox"/> Cooler Out of Temp, Client Contacted, Proceed/Cancel <input type="checkbox"/> Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?	/			<input type="checkbox"/> Containers, Broken	
6. Were samples received in appropriate containers?	/			<input type="checkbox"/> Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	/			<input type="checkbox"/> COC & Samples Do Not Match <input type="checkbox"/> COC Incorrect/Incomplete <input type="checkbox"/> COC Not Received	
8. Were all of the samples listed on the COC received?	/			<input type="checkbox"/> Sample Received, Not on COC <input type="checkbox"/> Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	/			<input type="checkbox"/> COC; No Date/Time; Client Contacted	Labeling Verified by: _____ Date: _____
10. Was the sampler identified on the COC?	/			<input type="checkbox"/> Sampler Not Listed on COC	pH test strip lot number: _____
11. Is the client and project name/# identified?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	/			<input type="checkbox"/> COC No tests on COC	
13. Is the matrix of the samples noted?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	/			<input type="checkbox"/> COC Incorrect/Incomplete	Box 16A: pH Preservation Box 18A: Residual Chlorine
15. Were samples received within holding time?	/			<input type="checkbox"/> Holding Time - Receipt	Preservative: _____
16. Were samples received with correct chemical preservative (excluding Encore)?	/			<input type="checkbox"/> pH Adjusted, pH Included (See box 16A) <input type="checkbox"/> Incorrect Preservative	Lot Number: _____ Exp Date: _____ Analyst: _____
17. Were VOA samples received without headspace?	/			<input type="checkbox"/> Headspace (VOA only) <input type="checkbox"/> Residual Chlorine	Date: _____ Time: _____
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____	/				
19. For 1613B water samples is pH<9?	/			<input type="checkbox"/> If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?	/			<input type="checkbox"/> Project missing info	
Project #: <u>14004326</u> PM Instructions: _____					

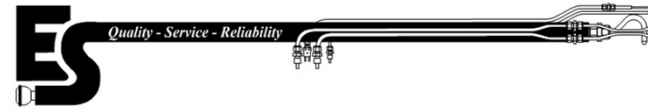
Sample Receiving Associate: Roger Thompson Date: 9-7-20 QA026R32.doc, 062719



APPENDIX E EQUIPMENT CALIBRATION DATA

Pretest Equipment Calibration Data

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



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

DATE: **1/15/2020** METER SERIAL #: **MB 8** BAROMETRIC PRESSURE (in Hg): INITIAL **30.19** FINAL **30.19** AVG (P_{bar}) **30.19**
 METER PART #: **13276842** CRITICAL ORIFICE SET SERIAL #: **1393**

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)			TEMPERATURES °F					ELAPSED TIME (MIN) q	DGM DH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	DH _®	
				INITIAL	FINAL	NET (V _m)	AMBIENT	DGM INLET		DGM OUTLET										DGM AVG
								INITIAL	FINAL	INITIAL	FINAL									
11	1	0.306	23.5	151.919	158.115	6.196	70.5	76	78	75	76	76.25	15.00	0.44	6.1634	6.0181	0.976			1.53
	2																			
	3																			
16	1	0.4268	22.5	158.115	163.916	5.801	71	77	79	76	77	77.25	10.00	0.9	5.7662	5.5933	0.970			1.61
	2																			
	3																			
18	1	0.4961	21.5	163.916	170.574	6.658	71.1	79	80	77	78	78.5	10.00	1.1	6.6059	6.5009	0.984			1.45
	2																			
	3																			
26	1	0.7131	19	170.654	180.354	9.70	71.1	80	81	78	79	79.5	10.00	2.5	9.6389	9.3444	0.969			1.60
	2																			
	3																			
31	1	0.8358	17.5	180.354	191.665	11.311	71.4	81	84	79	80	81	10.00	3.5	11.2357	10.9492	0.974			1.63
	2																			
	3																			
													AVG =	0.976	0.16	0.66				
													AVG =	0.970	-0.50	-0.66				
													AVG =	0.984	0.94	1.51				
													AVG =	0.969	-0.56	-0.52				
													AVG =	0.974	-0.04	0.52				

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 = **0.975**

AVERAGE DH_® = **1.56**

(1) $V_{m(std)} = K_1 * V_m * \frac{Pbar + (\Delta H / 13.6)}{T_m}$ = Net volume of gas sample passed through DGM, corrected to standard conditions
 K₁ = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
 T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $V_{cr(std)} = K' * \frac{Pbar * \Theta}{\sqrt{T_{amb}}}$ = 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) $Y = \frac{V_{cr(std)}}{V_{m(std)}}$ = DGM calibration factor

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

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



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

DATE: 1/14/2020 METER SERIAL #: MB 15 BAROMETRIC PRESSURE (in Hg): INITIAL 30.27 FINAL 30.27 AVG (P_{bar}) 30.27
 METER PART #: CRITICAL ORIFICE SET SERIAL #: 1393

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)			TEMPERATURES °F					ELAPSED TIME (MIN) q	DGM DH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	DH ₀		
				INITIAL	FINAL	NET (V _m)	AMBIENT		DGM INLET		DGM OUTLET									DGM AVG	
							INITIAL	FINAL	INITIAL	FINAL	INITIAL										FINAL
11	1	0.306	23.5	240.408	246.224	5.816	70.4	65	67	65	67	66	15.00	0.5	5.9147	6.0346	1.020			1.77	
	2	0.306																			
	3	0.306																			
16	1	0.4268	22.5	246.224	251.697	5.473	70.4	67	68	67	68	67.5	10.00	1	5.5568	5.6113	1.010			1.81	
	2	0.4268																			
	3	0.4268																			
18	1	0.4961	20.5	251.697	257.984	6.287	70.5	68	70	68	70	69	10.00	1.2	6.3682	6.5218	1.024			1.61	
	2	0.4961																			
	3	0.4961																			
26	1	0.7131	17.5	257.984	267.179	9.195	70.9	70	71	70	71	70.5	10.00	2.7	9.3212	9.3709	1.005			1.75	
	2	0.7131																			
	3	0.7131																			
31	1	0.8358	17.5	267.179	277.971	10.792	71.1	71	73	71	73	72	10.03	3.6	10.9329	11.0142	1.007			1.70	
	2	0.8358																			
	3	0.8358																			
																AVG =	1.007	-0.59	0.21		

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 = 1.013

AVERAGE DH₀ = 1.73

(1) $V_{m(std)} = K_1 * V_m * \frac{Pbar + (\Delta H / 13.6)}{T_m}$ = Net volume of gas sample passed through DGM, corrected to standard conditions
 K₁ = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
 T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $V_{cr(std)} = K' * \frac{Pbar * \Theta}{\sqrt{T_{amb}}}$ = 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) $Y = \frac{V_{cr(std)}}{V_{m(std)}}$ = DGM calibration factor

$DH_0 = \left(\frac{0.75 q}{V_{cr(std)}} \right)^2 DH \left(\frac{V_m(std)}{V_m} \right)$

Initial Sample Probe Calibration Form

 Probe ID P4-2/TC-5D

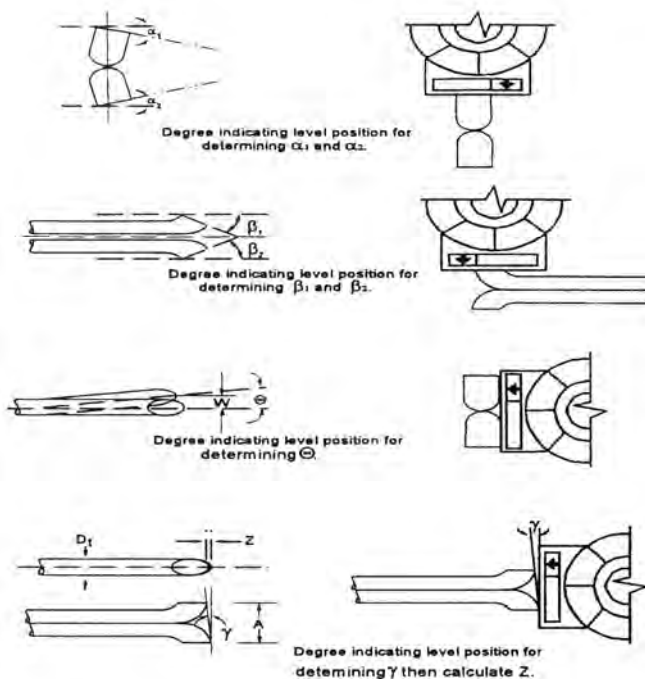
 Date 06/16/20

 Technician P. Grady

"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 (-10° = α_1 = + 10°)	2
α_2 (-10° = α_2 = + 10°)	1
β_1 (-5° = β_1 = + 5°)	1
β_2 (-5° = β_2 = + 5°)	1
γ	1
Θ	0
$z = A \tan \gamma$ (< 0.125")	0.011
$W = A \tan \Theta$ (< 0.03125")	0.0000
D_t (3/16 = D_t = 3/8")	0.251
A	0.650
$A/2D_t$ (1.05 = P_A/D_t = 1.5)	1.295

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

A. Bottom View; showing minimum pitot tube-nozzle separation.

Does X Exceed 0.75 inches? Yes

Does Y Exceed 3 inches? NA

B. Side View; to prevent pitot tube from interfering with gas flow streamlines approaching the nozzle, the impact pressure opening plane of the pitot tube shall be even with or above the nozzle entry plane.

$Y \geq 7.62 \text{ cm (3 in.)}$

Thermocouple Calibration

	Ice Bath °R			Ambient °R			Boiling Water °R		
	1	2	3	1	2	3	1	2	3
Reference Temp	492.3	492.3	492.3	533.4	533.4	533.4	671.5	671.5	671.5
Thermocouple Temp	492.9	492.8	492.8	532.7	532.6	532.7	673.1	673	673
Difference (%)	0.1	0.1	0.1	-0.1	-0.1	-0.1	0.2	0.2	0.2

Temperature values must be within 1.5% of reference temperature

I certify that the probe ID P4-2/TC-5D meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor C_p of 0.84.

 Certified By: P. Grady

 Date: 06/16/20

Initial Sample Probe Calibration Form

 Probe ID P4-3/TC-7D

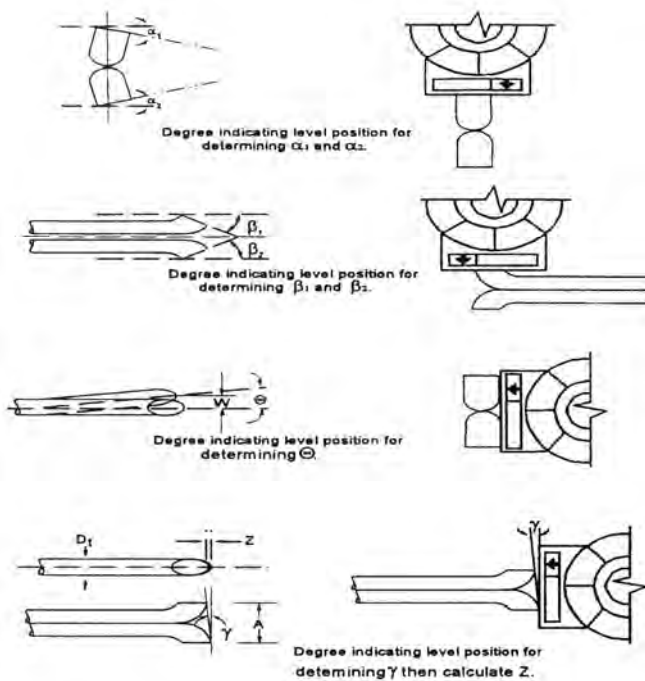
 Date 06/16/20

 Technician P. Grady

"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 (-10° = α_1 = + 10°)	1
α_2 (-10° = α_2 = + 10°)	0
β_1 (-5° = β_1 = + 5°)	1
β_2 (-5° = β_2 = + 5°)	1
γ	1
θ	1
$z = A \tan \gamma$ (< 0.125")	0.011
$W = A \tan \theta$ (< 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

A. Bottom View; showing minimum pitot tube-nozzle separation.

Does X Exceed 0.75 inches? Yes

Does Y Exceed 3 inches? NA

B. Side View; to prevent pitot tube from interfering with gas flow streamlines approaching the nozzle, the impact pressure opening plane of the pitot tube shall be even with or above the nozzle entry plane.

$Y \geq 7.62 \text{ cm (3 in.)}$

Thermocouple Calibration

	Ice Bath °R			Ambient °R			Boiling Water °R		
	1	2	3	1	2	3	1	2	3
Reference Temp	492.3	492.3	492.3	533.4	533.4	533.4	671.5	671.5	671.5
Thermocouple Temp	492.7	492.6	492.6	533.1	533.2	533.2	671.8	671.8	671.8
Difference (%)	0.1	0.1	0.1	-0.1	0.0	0.0	0.0	0.0	0.0

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 hereby assigned a pitot tube calibration factor C_p of 0.84.

 Certified By: P. Grady

 Date: 06/16/20

Post Test Equipment Calibration Data

POST TEST DRY GAS METER CALIBRATION

DATE: 07/30/20 METER BOX #: 8 BAROMETRIC PRESSURE (in Hg): 29.87 29.87 AVG (P_{bar}) 29.87
 TECHNICIAN: A. Anderson CRITICAL ORIFICE SET SERIAL #: 1393

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)			TEMPERATURES °F					ELAPSED TIME (MIN) q	DGM DH (in H ₂ O)	(1) V _m (STD)	(2) V _α (STD)	(3) Y	Y % Diff to Average Y	DH _®	
				INITIAL	FINAL	NET (V _m)	AMBIENT	DGM INLET		DGM OUTLET									DGM AVG
	1																		
	2																		
	3																		
18	1	0.4961	21	739.340	746.025	6.685	74	69	70	69	69	69.25	10.00	1.2	6.6790	6.4145	0.960	-0.29	1.64
	2	0.4961	21	746.025	752.692	6.667	72	70	72	69	70	70.25	10.00	1.2	6.6484	6.4265	0.967	0.36	1.63
	3	0.4961	21	752.692	759.397	6.705	73	72	73	70	71	71.5	10.00	1.2	6.6706	6.4205	0.963	-0.07	1.63
AVG = 0.963																			
	1																		
	2																		
	3																		
AVG =																			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.963

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 0.975

PERCENT DIFFERENCE = -1.2



POST TEST DRY GAS METER CALIBRATION

DATE: 09/09/20 METER BOX #: 15 BAROMETRIC PRESSURE (in Hg): 30.22 30.22 AVG (P_{bar}) 30.22
 TECHNICIAN: A. Anderson CRITICAL ORIFICE SET SERIAL #: 1393

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)			TEMPERATURES °F					ELAPSED TIME (MIN) q	DGM DH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	Y % Diff to Average Y	DH _®	
				INITIAL	FINAL	NET (V _m)	AMBIENT	DGM INLET		DGM OUTLET									DGM AVG
	1																		
	2																		
	3																		
18	1	0.4961	21.5	370.615	377.048	6.433	73	74	74	74	74	74	10.00	1.3	6.4460	6.4957	1.008	0.17	1.74
	2	0.4961	21.5	377.048	383.50	6.452	73	74	74	74	74	74	10.00	1.3	6.4650	6.4957	1.005	-0.12	1.74
	3	0.4961	21.5	383.50	389.941	6.441	74	74	74	74	74	74	10.00	1.3	6.4540	6.4896	1.006	-0.05	1.74
AVG =																			
AVG =																1.006			
	1																		
	2																		
	3																		
AVG =																			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.006

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 1.013

PERCENT DIFFERENCE = -0.7

Post-Test Sample Probe Calibration Form

Probe ID P4-2

Visual Inspection	
Do pitot tips appear to be damaged?	<u> NO </u>
Do thermocouple wires appear broken or shorted?	<u> NO </u>
Do all components appear to be in good condition?	<u> YES </u>

Post-Test Thermocouple Calibration		
Reference Temperature °F	Thermocouple Temperature °F	Difference °F
<u> 65 </u>	<u> 65 </u>	<u> 0 </u>

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

Acceptable Deviation +/- 2 °F

 x Acceptable
 Unacceptable

Date 09/11/20

Technician AA

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 °F	Thermocouple Temperature °F	Difference °F
<u> 65 </u>	<u> 65.8 </u>	<u> 0.8 </u>

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

Acceptable Deviation +/- 2 °F

 x Acceptable
 Unacceptable

Date 09/11/20

Technician AA