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Report

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August 2020

SOURCE EMISSIONS TESTING OF THE VINYL ETHERS NORTH CARBON BED

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SOURCE EMISSIONS TESTING OF THE VINYL ETHERS NORTH CARBON BED

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Date	**August 5, 2020**
Prepared by	**Patrick Grady, Project Associate**
Checked by	**David Ostaszewski, PE, Senior Managing Engineer**

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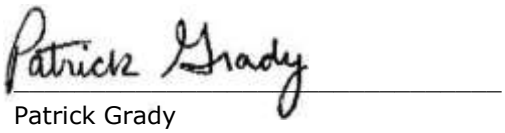
This report has been reviewed and to the best of our knowledge the report is complete, and the results presented herein are accurate, error free, legible, and representative of the actual emissions measured during testing.



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1. INTRODUCTION AND BACKGROUND

O'Brien & Gere Engineers, Inc., a Ramboll Company (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 June 25, 2020. Messrs. Patrick Grady, Jeff Sheldon, Steve Milo, Nate Woolley, 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. Dr. William Anderson of Europhins/Test America was present to assist with the testing and serve as sample custodian. 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 (O_2) and carbon dioxide (CO_2) 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 O_2 and CO_2 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. H_20.
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% NH_4OH) 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% NH_4OH solution (Container #1). The glass fiber filter was removed from its housing and transferred to a polyethylene bottle (Container #2). Any particulate matter and filter fibers which adhered to the filter holder and gasket were also placed in Container #2. The XAD-2 resin trap was sealed, labelled and placed in an iced sample cooler. The back-half of the filter holder, coil condenser condensate trap and connecting glassware were rinsed with the same MeOH/ 5% NH_4OH solution and placed in Container #3.

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

Containers were sealed with Teflon® tape[1] 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).

[1] The tape is used to seal the *outside* of the container and does not come into contact with the sample contents. This procedure was confirmed as appropriate by the analytical laboratory.

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

Note that the front-half fraction of the samples for all test runs at each test location exceeded the analytical calibration range. These samples were diluted and re-analyzed and a revised value was calculated using the dilution factor. Under advisement from the laboratory HFPO-DA emissions were calculated using the undiluted laboratory results. Further discussion of the laboratory procedures is provided in Appendix D.

Table 1 presents a detailed summary of the HFPO-DA test results. HFPO-DA concentrations at the carbon bed inlet ranged from 6.53E-02 mg/dscm to 9.37E-02 mg/dscm and averaged 7.90E-02 mg/dscm. Corresponding mass emissions of HFPO-DA ranged from 4.17E-03 lb/hr to 6.08E-03 lb/hr and averaged 5.03E-03 lb/hr.

Concentrations of HFPO-DA at the carbon bed outlet ranged from 7.14E-03 mg/dscm to 1.31E-02 mg/dscm and averaged 9.79E-03 mg/dscm. Mass emission rates of HFPO-DA from the carbon bed outlet ranged from 4.60E-04 lb/hr to 8.69E-04 lb/hr and averaged 6.50E-04 lb/hr. The resulting HFPO-DA removal efficiency of the VEN carbon bed ranged from 82 percent to 90 percent and averaged greater than 87 percent.

HFPO-DA concentrations from the Division Stack ranged from 8.96E-03 mg/dscm to 1.21E-02 mg/dscm and averaged 1.04E-02 mg/dscm. Mass emission rates of HFPO-DA from the Division Stack ranged from 9.01E-04 lb/hr to 1.23E-03 lb/hr and averaged 1.04E-03 lb/hr.

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 ±2°F; DGM ±5.4°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 ft^3. 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% NH_4OH solution to evaluate the general rinsing efficiency of the sampling train recovery process.

Reagent blanks of the diH_2O used in the sample trains and MeOH/5% NH_4OH 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	Run 1	Run 2	Run 3	Average
Source ID:		Carbon Bed Inlet				Carbon Bed Outlet				Division Stack		
Run Date	25Jun20	25Jun20	25Jun20		25Jun20	25Jun20	25Jun20		25Jun20	25Jun20	25Jun20	
Start/Stop Time	1115-1328	1420-1638	1730-1933		1115-1328	1420-1638	1730-1933		1115-1328	1420-1638	1730-1933	
Exhaust Gas Conditions												
Temperature (deg. F)	78	82	87	**82**	90	90	92	**91**	87	89	92	**89**
Moisture (volume %)	1.8	1.8	1.9	**1.8**	1.4	1.7	1.7	**1.6**	1.7	2.1	1.9	**1.9**
Oxygen (dry volume %)	20.9	20.9	20.9	**20.9**	20.9	20.9	20.9	**20.90**	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**	0.0	0.0	0.0	**0.00**
Volumetric Flow Rate												
acfm	17,609	18,087	18,535	**18,077**	18,605	18,040	18,927	**18,524**	28,317	28,329	28,389	**28,345**
dscfm	16,732	17,061	17,320	**17,038**	17,781	17,198	17,994	**17,658**	27,045	26,829	26,808	**26,894**
HFPO - Dimer Acid												
mg/dscm	7.79E-02	6.53E-02	9.37E-02	**7.90E-02**	1.31E-02	7.14E-03	9.19E-03	**9.79E-03**	1.21E-02	8.96E-03	1.00E-02	**1.04E-02**
lb/hr	4.88E-03	4.17E-03	6.08E-03	**5.05E-03**	8.69E-04	4.60E-04	6.19E-04	**6.50E-04**	1.23E-03	9.01E-04	1.00E-03	**1.04E-03**
Carbon Bed Removal Efficiency												
percent	82	89	90	87								

APPENDIX A
PROCESS OPERATING DATA

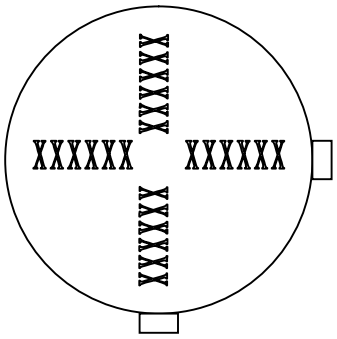
Date	**6/25/2020**										
Time	1100				1200				1300		
Stack Testing		RUN1 -1115-1328									
VEN Product		PPVE									
VEN Precursor											
VEN Condensation (HFPO)											
VEN ABR											
VEN Refining											
Stripper Column Vent											

Date	6/25/2020										
Time					1500				1600		
Stack Testing		RUN 2 - 1420-1638									
VEN Product		PPVE									
VEN Precursor											
VEN Condensation (HFPO)											
VEN ABR											
VEN Refining											
Stripper Column Vent											

Date **6/25/2020**

Time		1700				1800				1900			
Stack Testing				RUN 3 - 1730-1933									
VEN Product				PPVE									
VEN Precursor													
VEN Condensation (HFPO)													
VEN ABR													Burnout
VEN Refining													
Stripper Column Vent													

APPENDIX B
SCHEMATICS OF THE TEST LOCATIONS



Crossectional Area Showing
Velocity Traverse Point Locations

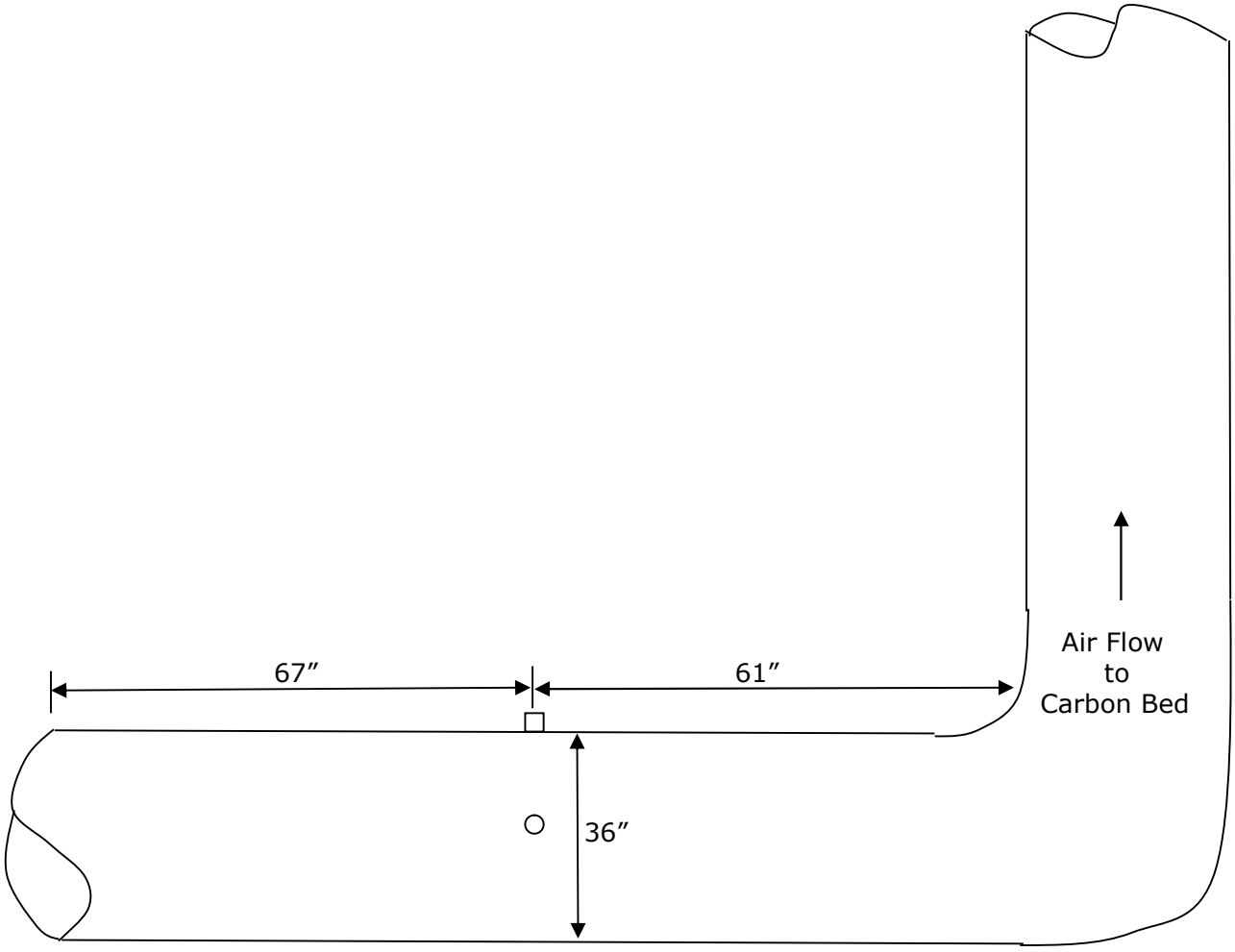


Figure 1
Carbon Bed Inlet Sampling Location
Vinyl Ethers North
The Chemours Company
Fayetteville, North Carolina

Sample Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: VEN Carbon Bed Inlet

Stack Diameter: 36 inches

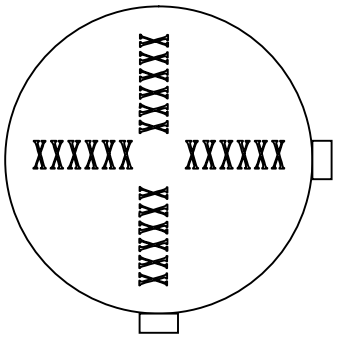
Sampling Locations: 1.9 diameters downstream
1.7 diameters upstream

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.



Crossectional Area Showing
Velocity Traverse Point Locations

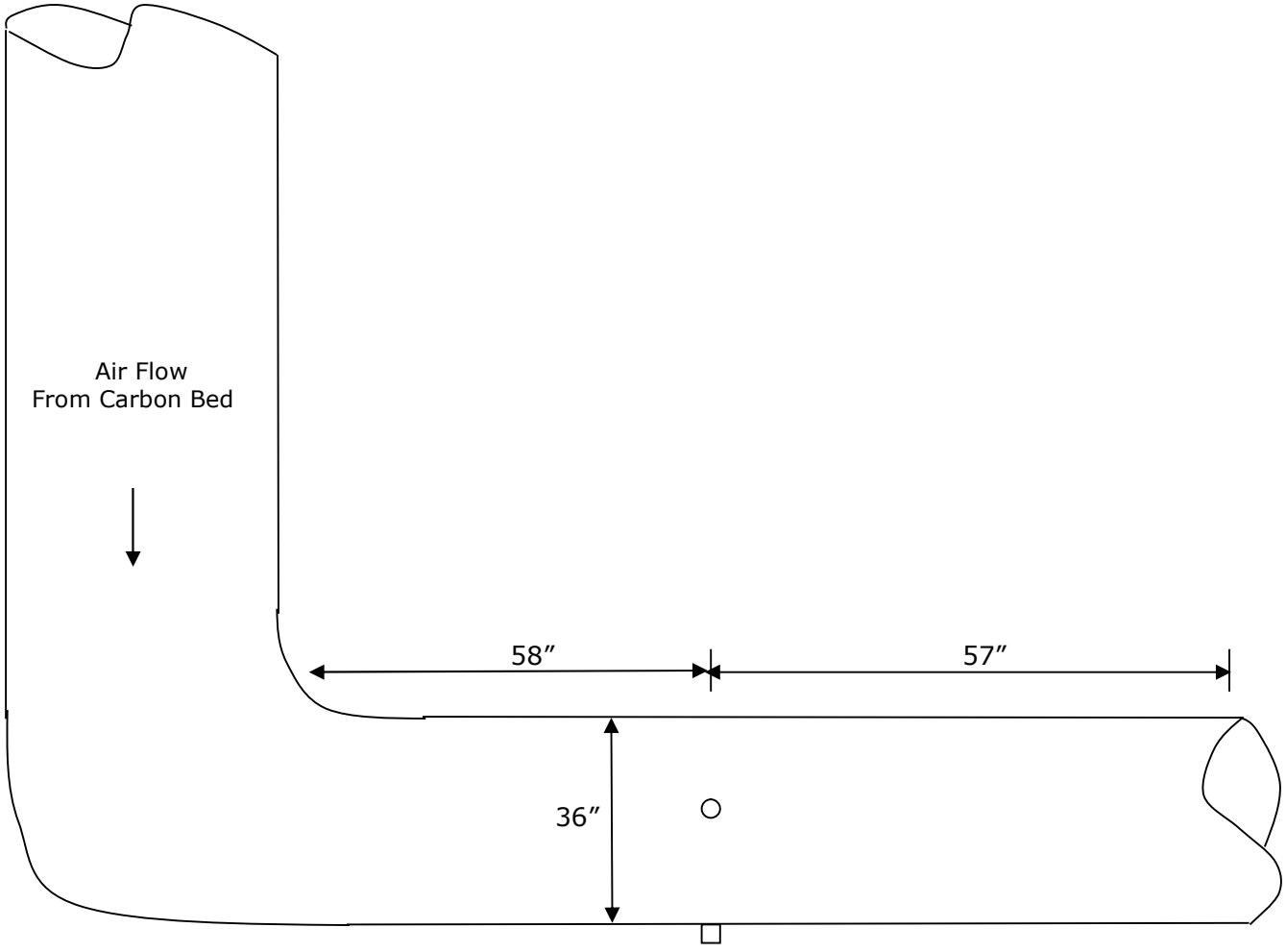


Figure 2
Carbon Bed Outlet Sampling Location
Vinyl Ethers North
The Chemours Company
Fayetteville, North Carolina

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.

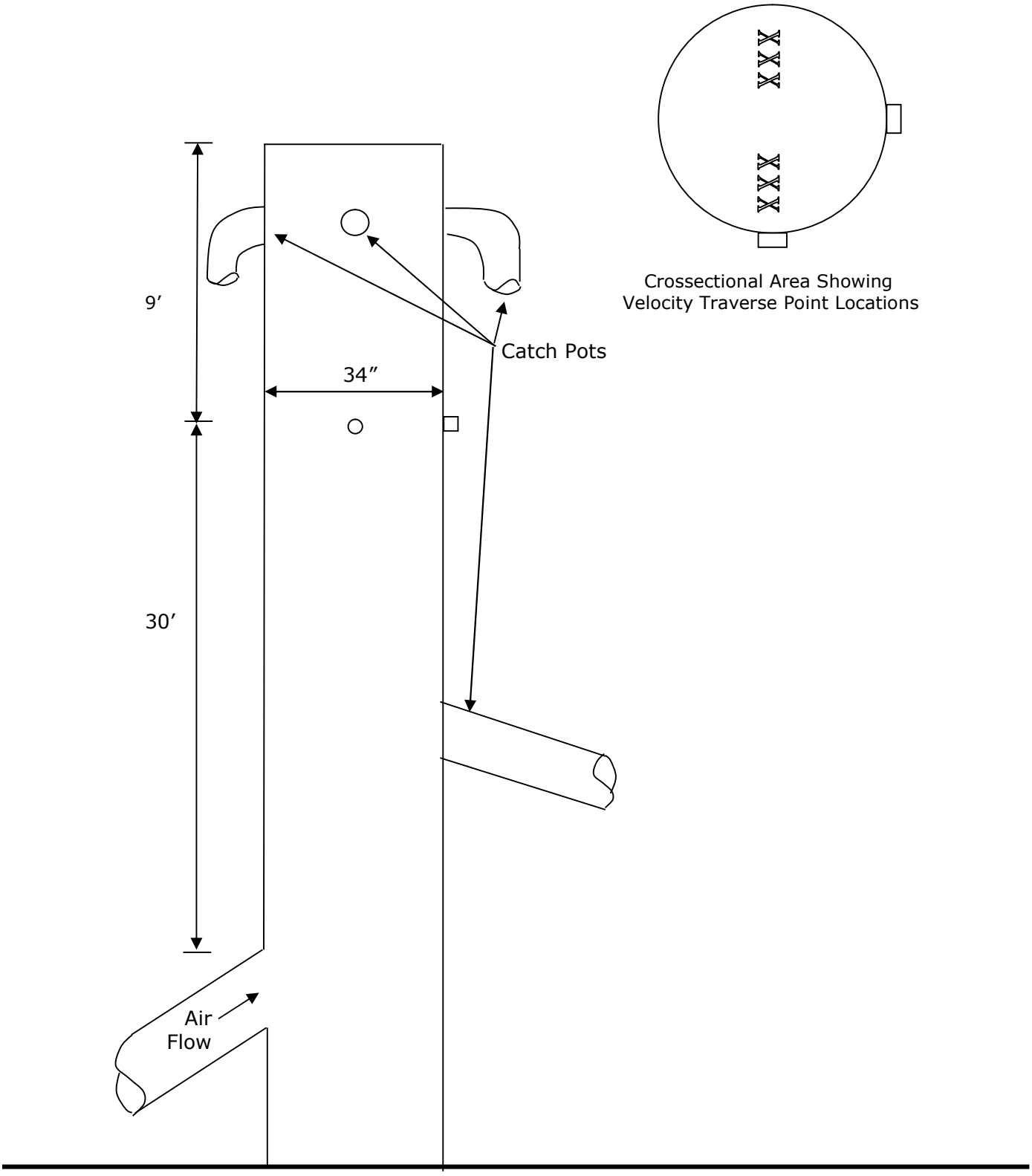


Figure 3
Division Stack Sampling Location
Vinyl Ethers North
The Chemours Company
Fayetteville, North Carolina

Velocity Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: Division Stack Exhaust

Stack Diameter: 34 inches

Sampling Locations: 11 diameters downstream
3.2 diameters upstream

Minimum Number of Traverse points as specified by EPA Method 1: 12

Number of traverse points sampled: 12

Traverse Point Number	Percent of Stack Diameter From Inside Wall	Distance in Inches From Inside Wall*
1	4.4	1.5
2	14.6	5.0
3	29.6	10.1
4	70.4	23.9
5	85.4	29.0
6	95.6	32.5

*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

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

	Run 1							Run 2							Run 3					
Traverse Point	Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P
A1	81	0.50	1.90	78	74	0.7071		80	0.48	1.82	82	80	0.6928		86	0.52	1.98	90	89	0.7211
2	81	0.48	1.82	80	75	0.6928		81	0.52	1.98	84	79	0.7211		86	0.54	2.05	94	89	0.7348
3	81	0.48	1.82	82	75	0.6928		81	0.56	2.13	87	80	0.7483		86	0.54	2.05	95	89	0.7348
4	80	0.50	1.90	83	75	0.7071		81	0.56	2.13	88	80	0.7483		86	0.54	2.05	97	89	0.7348
5	80	0.48	1.82	84	75	0.6928		81	0.54	2.05	89	80	0.7348		87	0.62	2.36	98	90	0.7874
6	80	0.45	1.71	85	76	0.6708		81	0.56	2.13	89	80	0.7483		87	0.64	2.43	99	90	0.8000
7	80	0.46	1.75	85	76	0.6782		81	0.56	2.13	90	80	0.7483		86	0.64	2.43	99	90	0.8000
8	78	0.52	1.98	86	76	0.7211		81	0.56	2.13	90	81	0.7483		86	0.68	2.58	99	90	0.8246
9	75	0.58	2.20	86	77	0.7616		81	0.60	2.28	91	81	0.7746		86	0.68	2.58	99	90	0.8246
10	75	0.58	2.20	86	77	0.7616		81	0.62	2.34	91	81	0.7874		86	0.68	2.58	99	90	0.8246
11	80	0.60	2.28	86	77	0.7746		82	0.62	2.34	91	82	0.7874		86	0.62	2.36	99	91	0.7874
12	80	0.58	2.20	87	77	0.7616		82	0.64	2.43	92	82	0.8000		86	0.54	2.05	99	91	0.7348
B1	75	0.44	1.67	79	77	0.6633		82	0.40	1.52	86	83	0.6325		86	0.45	1.71	92	90	0.6708
2	74	0.50	1.90	83	78	0.7071		82	0.48	1.82	89	84	0.6928		87	0.48	1.82	94	90	0.6928
3	71	0.54	2.05	84	78	0.7348		82	0.48	1.82	91	84	0.6928		87	0.48	1.82	95	90	0.6928
4	74	0.60	2.28	86	78	0.7746		83	0.54	2.05	93	84	0.7348		87	0.58	2.20	97	90	0.7616
5	78	0.60	2.28	86	78	0.7746		84	0.60	2.28	94	85	0.7746		87	0.62	2.36	98	90	0.7874
6	80	0.60	2.28	87	78	0.7746		84	0.65	2.47	94	85	0.8062		87	0.65	2.47	98	90	0.8062
7	80	0.58	2.20	87	78	0.7616		84	0.60	2.28	95	85	0.7746		87	0.65	2.47	98	90	0.8062
8	78	0.56	2.13	87	79	0.7483		85	0.54	2.05	95	85	0.7348		87	0.54	2.05	97	90	0.7348
9	79	0.50	1.90	87	79	0.7071		85	0.54	2.05	96	86	0.7348		87	0.54	2.05	97	90	0.7348
10	79	0.50	1.90	87	79	0.7071		85	0.52	1.98	96	87	0.7211		87	0.52	1.98	97	90	0.7211
11	80	0.52	1.98	87	79	0.7211		84	0.54	2.05	97	87	0.7348		87	0.52	1.98	97	90	0.7211
12	80	0.48	1.82	87	79	0.6928		85	0.52	1.98	97	87	0.7211		87	0.52	1.98	97	90	0.7211
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						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
Average	78	0.53	2.00	85	77	0.7246		82	0.55	2.09	91	83	0.7415		87	0.57	2.18	97	90	0.7567

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

Parameter	Run 1	Run 2	Run 3
Run Date	6/25/20	6/25/20	6/25/20
Start/Stop Time	1115-1328	1420-1638	1730-1933
Duration of Run, Minutes	96	96	96
Ave. Nozzle Diameter, inches	0.244	0.244	0.244
Pitot Calibration Factor, CF	0.84	0.84	0.84
Meter Gamma	0.993	0.993	0.993
Meter Delta H, inches of H2O	1.82	1.82	1.82
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	30.03	30.03	30.03
Static Pressure, inches of H2O	-7	-7	-7
Dry Gas Meter Sample Volume, (VM)ft3			
Initial	89.174	162.872	238.586
Final	162.642	238.331	316.708
Total Volume	73.234	75.006	77.924
Ave. Stack Temperature, Ts(F)	78.3	82.4	86.5
Ave. Meter Temperature, Tm(F)	80.9	87.0	93.4
Ave. Run Delta H, inches of H2O	2.00	2.09	2.18
Ave. Square Root of Delta P	0.7246	0.7415	0.7567
Moisture Data			
Volume of water collected, mls	10.6	13.4	15.2
Silica Gel, grams	17.2	14.4	16.2
Total Collected, mls	27.8	27.8	31.4
ORSAT Data			
%O2	20.90	20.90	20.90
%CO2	0.0	0.0	0.0
%CO			

Calculations

Vw(std), scf =	1.309	1.309	1.478
Vm(std), dscf =	71.592	72.531	74.498
Bws=	0.018	0.018	0.019
Md=	28.84	28.84	28.84
Ms=	28.64	28.64	28.63
Vs, ft/sec =	41.5	42.6	43.7
Qs, acfm =	17,609	18,087	18,535
Qs(std), dscfm =	16,732	17,061	17,320
Isokinetic Sampling Rate, %	97.0	96.4	97.5

Where:
An = area of the nozzle
As = area of the stack
Vw(std) = volume of water vapor in gas, standard conditions = 0.04707*Vlc
Vm(std) = vol. of gas sampled, standard conditions = 17.647 x Vm x gamma x [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 x%CO2) + (0.32 x%O2) + [0.28 x (%N2 + %CO)]
Ms = molecular weight of stack gas, wet basis = [Md x (1-Bws)] + (18.0 x Bws)
Vs = stack gas velocity = 85.49 x Cp x (avg. Sq.Rt. dP) x [Sq.Rt. (Ts(R))/(Ms x Ps)]
Qs = stack gas flow rate = Vs x As x 60
Qs(std) = stack gas flow rate, standard conditions = Qs x (1-Bws) x (528/(Ts(R)) x (Ps/29.92)
Isokinetic sampling rate = {(Ts(R)) x [(0.00267 x Vlc) + (Vm(std)/17.647)] x 100}/(Time x vs x Ps x An x60)

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

Parameter:		Run 1				Run 2				Run 3				Average			
	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	0.15795	7.79E-02	5.68E-03	4.88E-03	0.13402	6.53E-02	4.75E-03	4.17E-03	0.19777	9.37E-02	6.83E-03	6.08E-03	0.16	7.90E-02	5.75E-03	5.05E-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:	89.174
Final gas meter volume:	162.642
Difference:	73.468

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

= 17.647x Vm, a x Gamma*[Pbar+(DeltaH/13.6)]/Tm(R)
= 17.647 x 0.000 x 0.993 x (30.03 + [(1.820 /13.6) / 541
= 71.592

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

impinger catch (mls):	11
silica gel (g)	17.2
total:	27.8

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

= (0.04707) x (Vl,c)
= 0.04707 x 27.8
= 1.309

Bwo = Proportion by volume of water vapor in gas stream

= Vw,std/(Vw,std+Vm,std)
= 1.31 / (1.31 + 71.592)
= 0.018

Ps = Stack gas static pressure (in. Hg)

= St/13.6
= -7.00 / 13.6
= -0.515

Pa = Absolute stack gas pressure (in. Hg)

= Ps+Pbar
= -0.515 + 30.03
= 29.52

MFD = Dry mole fraction of stack gas

= 1-Bwo
= 1 - 0.018
= 0.982

Md = 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

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

= (Md) x (MFD) + (0.18) x (Bwo*100)
= 28.84 x 0.982 + 0.18 x 1.79498
= 28.64

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)**

= Kp x (Cp) x (sqrt,deltaP) x sqrt((Ts + 460°R)/Mw*Pa))
= 85.48 x 0.84 x 0.72 x sqrt (0.64)
= 41.5

A **Cross sectional areas of stack (sq. ft)**

= pi/4*d^2
= 3.14159/4 x 3.00 ^2
= 7.07

Qa **Volumetric flow rate at actual conditions (acfm)**

= (60)sec/min(A)(Vs, avg)
= 60 x 7.0686 x 41.51
= 17,607

Qstd **Volumetric flow rate at standard conditions (scfm)**

= Qa x (528/Ts,avg + 460) x Pa/29.92
= 17,607 x (528 / 538) x 0.986
= 17,037

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

= Qstd x (1-Bwo)
= 17,037 x 0.9821
= 16,731

mg/dscm **HFPO-DA concentration**

= (mg/dscf) x 35.314 cu. ft./cu. meter
= (0.16 / 71.59) x 35.314
= 7.79E-02

lb/hr **HFPO-DA Mass Emission Rate**

= mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr
= 0.16 / 1,000 /[453.59) / 71.59)] x 16,732 x 60
= 4.88E-03

EPA Isokinetic Field Sheet

Methods Performed: Modified 0010

Client	The Chemours Company	Run Number	1	Pitot Number	P42
Location	Fayetteville, NC	Stack Diameter	36"	Pitot Coefficient	0.84
Source	VEN INLET	Barometric Pres.	30.03	Stack TC I.D.	P
Date	6/25/20	Static Pressure	-7.0	Oven Box I.D.	OB5
Operators	BG SM	Meter Box #	MB#5	Impinger Out I.D.	I03
Start Time	1115	Meter delta H	1.82	Nozzle Size	0.244
End Time	1328	Meter Gamma	0.993	XAD Trap I.D.	

Leak Check Rates	Sample Rate in.	Sample Rate cfm	Pitot +	Pitot -
Initial	10	0.005	✓	✓
Mid	12	0.005	✓	✓
Mid	10	0.006	✓	✓
Final	12	0.006	✓	✓

3.8

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
1	4	0.50	1.90	89.174	81	87	88	55	38	76	74	6	METER INLET 76
2	8	0.48	1.82	92.2	81	86	90	46	37	80	75	6	
3	12	0.48	1.82	95.4	81	86	89	46	37	82	75	6	
4	16	0.50	1.90	98.3	80	86	88	49	37	83	75	6	
5	20	0.48	1.82	101.3	80	86	88	48	37	84	75	6	
6	24	0.45	1.71	104.2	80	86	86	48	36	85	76	6	
7	28	0.46	1.75	107.3	80	86	84	47	36	85	76	6	
8	32	0.52	1.98	110.1	78	86	84	48	37	86	76	6	
9	36	0.58	2.20	—	75	83	83	48	37	86	77	6	
10	40	0.58	2.20	115.8	75	83	80	48	36	86	77	6	
11	44	0.60	2.28	119.1	80	84	85	48	37	86	77	6.5	
12	48	0.58	2.20	122.4	80	83	85	48	36	87	77	6.5	
				125.418									STOP 1203
1	52	0.44	1.67	125.652	75	82	84	58	49	79	77	6.5	START 1247
2	56	0.50	1.90	—	74	82	81	51	51	83	78	6	
3	60	0.54	2.05	131.3	71	80	81	51	44	84	78	6	
4	64	0.60	2.28	—	74	80	82	55	47	86	78	6	
5	68	0.60	2.28	137.4	78	82	83	56	48	86	78	6	
6	72	0.60	2.28	140.7	80	84	84	56	49	87	78	6	
7	76	0.58	2.20	144.3	80	86	85	56	48	87	78	6	
8	80	0.56	2.13	147.4	78	85	84	50	38	87	79	6	
9	84	0.50	1.90	150.4	79	85	84	50	37	87	79	6	
10	88	0.50	1.90	153.6	79	86	85	47	37	87	79	8	
11	92	0.52	1.98	156.7	80	87	88	45	36	87	79	8	
12	96	0.48	1.82	159.6	80	86	87	45	35	87	79	8	
				162.642									

Impinger Data (vol)		
#	Initial	Final
1	0	
2	100	
3	100	
4	0	
5	SiGel	
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		

RAMBOLL

EPA Isokinetic Field Sheet

Methods Performed: Modified 0010

Client	The Chemours Company	Run Number	2	Pitot Number	P42
Location	Fayetteville, NC	Stack Diameter	36"	Pitot Coefficient	0.84
Source	VEN INLET	Barometric Pres.	30.03	Stack TC I.D.	P42
Date	6/25/20	Static Pressure	-7.0	Oven Box I.D.	OG5
Operators	BG/SM	Meter Box #	MB#5	Impinger Out I.D.	IO4
Start Time	1420	Meter delta H	1.82	Nozzle Size	0.244
End Time	1638	Meter Gamma	0.993	XAD Trap I.D.	

Leak Check Rates				
	Sample Rate in.	cfm	Pitot +	Pitot -
Initial	12	0.006	✓	✓
Mid	10	0.005	✓	✓
Mid	10	0.006	✓	✓
Final	12	0.005	✓	✓

K3.8

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
1	4	0.48	1.82	162.672	80	86	85	58	50	82	80	5	
2	8	0.52	1.98	165.9	81	86	87	55	43	84	79	5	
3	12	0.56	2.13	169.2	81	86	86	52	39	87	80	5	
4	16	0.56	2.13	172.2	81	88	87	49	38	88	80	5	
5	20	0.54	2.05	175.3	81	86	87	48	40	89	80	5	
6	24	0.56	2.13	—	81	86	86	48	39	89	80	5	
7	28	0.56	2.13	181.5	81	87	86	46	39	90	80	5	
8	32	0.56	2.13	184.6	81	86	86	45	38	90	81	5	
9	36	0.60	2.28	187.7	81	86	87	44	39	91	81	5	
10	40	0.62	2.34	191.0	81	86	88	43	38	91	81	5	
11	44	0.62	2.34	194.4	82	88	87	43	39	91	82	5	
12	48	0.64	2.43	197.9	82	88	88	44	39	92	82	5	STOP 1503
				201.285									
1	52	0.40	1.52	201.738	82	89	88	54	43	86	83	5	RESTART 1550
2	56	0.48	1.82	204.6	82	89	89	43	43	89	84	5	
3	60	0.48	1.82	207.5	82	88	89	43	43	91	84	6	
4	64	0.54	2.05	—	83	89	90	44	43	43	84	6	
5	68	0.60	2.28	213.8	84	90	92	46	39	94	85	6	
6	72	0.65	2.47	216.2	84	90	91	44	38	94	85	6	
7	76	0.60	2.28	219.3	84	91	92	43	36	95	85	6	
8	80	0.54	2.05	—	85	91	91	42	36	95	85	6	
9	84	0.54	2.05	226.2	85	92	91	42	38	96	86	6	
10	88	0.52	1.98	—	85	92	91	43	40	96	87	6	
11	92	0.54	2.05	232.1	84	89	90	42	39	97	87	6	
12	96	0.52	1.98	235.2	85	91	91	42	39	97	87	6	
				238.331									

Impinger Data (vol)		
#	Initial	Final
1	0	
2	100	
3	100	
4	0	
5	SiGel	
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		

RAMBOLL

EPA Isokinetic Field Sheet

Methods Performed: Modified 0010

Client	The Chemours Company	Run Number	3	Pitot Number	P4-2
Location	Fayetteville, NC	Stack Diameter	36"	Pitot Coefficient	0.84
Source	VEN INLET	Barometric Pres.	30.03	Stack TC I.D.	P4-2
Date	6/25/20	Static Pressure	-7.0	Oven Box I.D.	OB-5
Operators	BG/SM	Meter Box #	MB#5	Impinger Out I.D.	IO-3
Start Time	1730	Meter delta H	1.82	Nozzle Size	0.244
End Time	1951	Meter Gamma	0.993	XAD Trap I.D.	

Leak Check Rates				
	Sample Rate in.	cfm	Pitot +	Pitot -
Initial	11	0.005	✓	✓
Mid	10	0.005	✓	✓
Mid	12	0.005	✓	✓
Final	14	0.007	✓	✓

K-3.3

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
1	4	0.52	1.98	238.580	86	98	90	52	46	90	89	6	
2	8	0.54	2.05	241.7	86	92	90	44	46	94	89	6	
3	12	0.54	2.05	244.9	86	92	91	42	44	95	89	6	
4	16	0.54	2.05	—	86	93	91	43	43	97	89	6	
5	20	0.62	2.36	251.2	87	92	90	43	44	98	90	6	
6	24	0.64	2.43	254.6	87	94	92	43	46	99	90	6	
7	28	0.64	2.43	257.9	86	94	92	44	44	99	90	6.5	
8	32	0.68	2.58	261.7	86	94	93	44	44	99	90	7	
9	36	0.68	2.58	265.0	86	94	93	44	43	99	90	7	
10	40	0.68	2.58	—	86	95	94	44	43	99	90	7	
11	44	0.62	2.36	271.6	86	94	91	44	42	99	91	7	
12	48	0.54	2.05	274.9	86	94	92	44	43	99	91	7	STOP 1818
				277.948									
1	52	0.45	1.71	278.146	86	93	94	56	44	92	90	6	
2	56	0.48	1.82	281.1	87	93	94	49	44	94	90	6	START 1845
3	60	0.48	1.82	283.9	87	94	95	45	44	95	90	6	
4	64	0.58	2.20	287.0	87	95	95	46	43	97	90	7	
5	68	0.62	2.36	290.5	87	94	95	47	43	98	90	7.5	
6	72	0.65	2.47	293.9	87	94	95	46	42	98	90	8	
7	76	0.65	2.47	297.2	87	94	94	47	42	98	90	8	
8	80	0.54	2.05	300.9	87	94	93	47	41	97	90	8	
9	84	0.54	2.05	304.2	87	95	93	47	40	97	90	8	
10	88	0.52	1.98	307.2	87	94	94	46	39	97	90	8	
11	92	0.52	1.98	310.6	87	95	95	46	39	97	90	8	
12	96	0.52	1.98	313.5	87	94	95	46	40	97	90	8	
				316.708									

Impinger Data (vol)		
#	Initial	Final
1	0	
2	100	
3	100	
4	0	
5	SiGel	
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		

RAMBOLL

Sample Train Recovery Data Sheet

Client Chemours Location Fayetteville, NC Source VEN Inlet Method M0010 Date 6/25/20

Run # 1

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	506.8	499.2	7.6
Impinger #2	752.8	753.2	-0.4
Impinger #3	728.6	728.8	-0.2
Impinger #4	495.2	491.6	3.6
Impinger #5	882.4	865.2	17.2
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1 _____
Filter #2 _____
Filter #3 _____
Run Start Time _____
Run End Time _____
Recovery Technician _____

Run # 2

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	480.2	467.8	12.4
Impinger #2	780.4	781.2	-0.2
Impinger #3	787.2	788.6	-1.4
Impinger #4	501.2	497.6	3.6
Impinger #5	868.6	854.2	14.4
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1 _____
Filter #2 _____
Filter #3 _____
Run Start Time _____
Run End Time _____
Recovery Technician _____

Run # 3

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	512.0	499.8	12.2
Impinger #2	745.6	747.0	-1.4
Impinger #3	760.2	759.6	0.6
Impinger #4	495.6	491.8	3.8
Impinger #5	911.4	895.2	16.2
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1 _____
Filter #2 _____
Filter #3 _____
Run Start Time _____
Run End Time _____
Recovery Technician _____

Nozzle Calibration Form

Plant I.D. Chemours

Project No. 75812

Source I.D. Vinyl Ethers

Personnel P. Grady

Date 6/22/20

Nozzle ID:	SS A
Diameter 1	.244
Diameter 2	.245
Diameter 3	.244
Average	.244

< 0.004" between high & low diameters

SS D PPA OUTLET

.239
.238
.238

Avg. .238

K factor 3.3

Cyclonic Flow Determination Data Sheet

Leak Ck			
	Int.		✓
	Post	✓	✓

Client THE CHEMOURS COMPANY
Location FAYETTEVILLE, NC
Source VEN INLET
Date 6/25/20
Operator BG/SM

Stack Diameter 36"
Upstream Distance
Downstream Distance
Minimum Traverse Points
Port Collar Length

Barometric Pressure 30.03
Probe ID P4-7
Velocity Guage ID MB#5
Static Pressure -7.0
Time

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (°F)	Angle at Null
A 1			87	-15
2			87	-9
3			87	-8
4			87	-8
5			87	+12
6			87	+0
7			87	+2
8			87	-0
9			87	0
10			87	0
11			87	8
12			87	12
B 1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (°F)	Angle at Null

RAMBOLL

VEN Carbon Bed Outlet Field Test Data

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

	Run 1							Run 2							Run 3					
Traverse Point	Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P
A1	91	0.31	0.99	79	78	0.5568		89	0.28	0.89	83	82	0.5292		92	0.28	0.89	87	87	0.5292
2	91	0.41	1.30	81	78	0.6403		90	0.28	0.89	83	81	0.5292		92	0.28	0.89	89	87	0.5292
3	91	0.39	1.24	84	78	0.6245		89	0.34	1.08	83	81	0.5831		91	0.34	1.08	91	87	0.5831
4	91	0.45	1.44	86	79	0.6708		90	0.36	1.15	88	82	0.6000		91	0.52	1.66	92	87	0.7211
5	91	0.45	1.44	87	79	0.6708		89	0.39	1.20	88	82	0.6245		91	0.64	2.04	93	87	0.8000
6	90	0.60	1.92	88	80	0.7746		89	0.60	1.92	88	82	0.7746		92	0.64	2.04	94	88	0.8000
7	90	0.60	1.92	88	80	0.7746		89	0.60	1.92	89	82	0.7746		92	0.64	2.04	94	88	0.8000
8	90	0.60	1.92	89	80	0.7746		89	0.60	1.92	90	82	0.7746		92	0.65	2.08	94	88	0.8062
9	90	0.62	1.98	90	81	0.7874		89	0.63	2.01	92	83	0.7937		92	0.62	1.98	94	88	0.7874
10	90	0.62	1.98	90	81	0.7874		90	0.63	2.01	93	84	0.7937		92	0.62	1.98	94	88	0.7874
11	90	0.62	1.98	90	81	0.7874		90	0.60	1.92	93	84	0.7746		92	0.62	1.98	94	89	0.7874
12	90	0.62	1.98	91	81	0.7874		90	0.60	1.92	93	84	0.7746		92	0.62	1.98	94	89	0.7874
B1	87	0.60	1.92	82	81	0.7746		92	0.85	2.72	85	85	0.9220		92	0.75	2.40	89	89	0.8660
2	89	0.60	1.92	87	81	0.7746		92	0.85	2.72	86	85	0.9220		92	0.82	2.60	94	89	0.9055
3	89	0.61	1.95	90	82	0.7810		91	0.87	2.78	88	85	0.9327		92	0.82	2.60	96	89	0.9055
4	89	0.80	2.56	90	82	0.8944		92	0.87	2.78	89	85	0.9327		92	0.89	2.84	97	90	0.9434
5	90	0.88	2.80	91	82	0.9381		91	0.85	2.72	91	85	0.9220		92	0.90	2.88	98	90	0.9487
6	90	0.88	2.80	91	82	0.9381		91	0.62	1.98	92	85	0.7874		93	0.73	2.33	98	90	0.8544
7	90	0.87	2.78	91	82	0.9327		91	0.54	1.72	92	86	0.7348		92	0.65	2.08	98	90	0.8062
8	89	0.59	1.88	91	82	0.7681		91	0.46	1.47	93	86	0.6782		92	0.60	1.92	97	90	0.7746
9	89	0.55	1.76	91	82	0.7416		91	0.45	1.44	93	86	0.6708		92	0.55	1.76	97	90	0.7416
10	89	0.55	1.76	90	82	0.7416		91	0.45	1.44	93	86	0.6708		93	0.55	1.76	97	91	0.7416
11	89	0.55	1.76	90	82	0.7416		91	0.45	1.44	93	87	0.6708		93	0.55	1.76	97	91	0.7416
12	89	0.55	1.76	90	82	0.7416		91	0.45	1.44	94	87	0.6708		93	0.55	1.76	97	91	0.7416
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
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						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	90	0.60	1.91	88	81	0.7669		90	0.57	1.81	90	84	0.7434		92	0.62	1.97	94	89	0.7787

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

Parameter	Run 1	Run 2	Run 3
Run Date	6/25/20	6/25/20	6/25/20
Start/Stop Time	1115-1328	1420-1638	1730-1933
Duration of Run, Minutes	96	96	96
Ave. Nozzle Diameter, inches	0.243	0.243	0.243
Pitot Calibration Factor, CF	0.84	0.84	0.84
Meter Gamma	0.992	0.992	0.992
Meter Delta H, inches of H2O	1.58	1.58	1.58
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	30.03	30.03	30.03
Static Pressure, inches of H2O	2.4	3.1	3
Dry Gas Meter Sample Volume, (VM)ft3			
Initial	643.337	721.947	795.965
Final	721.623	795.673	874.948
Total Volume	77.932	73.582	78.557
Ave. Stack Temperature, Ts(F)	89.8	90.3	92.0
Ave. Meter Temperature, Tm(F)	84.5	86.9	91.6
Ave. Run Delta H, inches of H2O	1.91	1.81	1.97
Ave. Square Root of Delta P	0.7669	0.7434	0.7787
Moisture Data			
Volume of water collected, mls	10.2	6.2	10.4
Silica Gel, grams	13.2	20.6	17
Total Collected, mls	23.4	26.8	27.4
ORSAT Data			
%O2	20.90	20.90	20.90
%CO2	0.0	0.0	0.0
%CO			
Calculations			
Vw(std), scf =	1.101	1.261	1.290
Vm(std), dscf =	75.595	71.049	75.227
Bws=	0.014	0.017	0.017
Md=	28.84	28.84	28.84
Ms=	28.68	28.65	28.65
Vs, ft/sec =	43.9	42.5	44.6
Qs, acfm =	18,605	18,040	18,927
Qs(std), dscfm =	17,781	17,198	17,994
Isokinetic Sampling Rate, %	97.2	94.5	95.6

Where:
An = area of the nozzle
As = area of the stack
Vw(std) = volume of water vapor in gas, standard conditions = 0.04707*Vlc
Vm(std) = vol. of gas sampled, standard conditions = 17.647 x Vm x gamma x [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 x%CO2) + (0.32 x%O2) + [0.28 x (%N2 + %CO)]
Ms = molecular weight of stack gas, wet basis = [Md x (1-Bws)] + (18.0 x Bws)
Vs = stack gas velocity = 85.49 x Cp x (avg. Sq.Rt. dP) x [Sq.Rt. (Ts(R))/(Ms x Ps)]
Qs = stack gas flow rate = Vs x As x 60
Qs(std) = stack gas flow rate, standard conditions = Qs x (1-Bws) x (528/(Ts(R)) x (Ps/29.92)
Isokinetic sampling rate = {(Ts(R)) x [(0.00267 x Vlc) + (Vm(std)/17.647)] x 100}/(Time x vs x Ps x An x60)

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

Parameter:		Run 1				Run 2				Run 3				Average			
	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	0.02794	1.31E-02	9.51E-04	8.69E-04	0.01436	7.14E-03	5.20E-04	4.60E-04	0.01957	9.19E-03	6.69E-04	6.19E-04	0.02	9.79E-03	7.13E-04	6.50E-04

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.

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

Initial gas meter volume:	643.337
Final gas meter volume:	721.623
Difference:	78.286

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

= 17.647x Vm, a x Gamma*[Pbar+(DeltaH/13.6)]/Tm(R)
= 17.647 x 0.000 x 0.992 x (30.03 + [(1.580 /13.6) / 544
= 75.595

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

impinger catch (mls):	10
silica gel (g)	13.2
total:	23.4

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

= (0.04707) x (Vl,c)
= 0.04707 x 23.4
= 1.101

Bwo = Proportion by volume of water vapor in gas stream

= Vw,std/(Vw,std+Vm,std)
= 1.10 / (1.10 + 75.595)
= 0.014

Ps = Stack gas static pressure (in. Hg)

= St/13.6
= 2.40 / 13.6
= 0.176

Pa = Absolute stack gas pressure (in. Hg)

= Ps+Pbar
= 0.176 + 30.03
= 30.21

MFD = Dry mole fraction of stack gas

= 1-Bwo
= 1 - 0.014
= 0.986

Md = 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

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

= (Md) x (MFD) + (0.18) x (Bwo*100)
= 28.84 x 0.986 + 0.18 x 1.43609
= 28.68

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)**
= Kp x (Cp) x (sqrt,deltaP) x sqrt((Ts + 460°R)/Mw*Pa))
= 85.48 x 0.84 x 0.77 x sqrt (0.63)
= 43.9

A **Cross sectional areas of stack (sq. ft)**
= pi/4*d^2
= 3.14159/4 x 3.00 ^2
= 7.07

Qa **Volumetric flow rate at actual conditions (acfm)**
= (60)sec/min(A)(Vs, avg)
= 60 x 7.0686 x 43.86
= 18,603

Qstd **Volumetric flow rate at standard conditions (scfm)**
= Qa x (528/Ts,avg + 460) x Pa/29.92
= 18,603 x (528 / 550) x 1.010
= 18,038

Qstd,dry **Volumetric flow rate at dry standard conditions per minute(dscfm)**
= Qstd x (1-Bwo)
= 18,038 x 0.9856
= 17,779

mg/dscm **HFPO-DA concentration**
= (mg/dscf) x 35.314 cu. ft./cu. meter
= (0.03 / 75.60) x 35.314
= 1.31E-02

lb/hr **HFPO-DA Mass Emission Rate**
= mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr
= 0.03 / 1,000 /[453.59) / 75.60)] x 17,781 x 60
= 8.69E-04

OUT

EPA Isokinetic Field Sheet

Methods Performed: Modified 0010

Client	The Chemours Company	Run Number	1	Pitot Number	P4-3
Location	Fayetteville, NC	Stack Diameter	36"	Pitot Coefficient	.84
Source	OUTLET CB VEN	Barometric Pres.	32.4	Stack TC I.D.	P4-3
Date	6-25-20	Static Pressure	-3.03	Oven Box I.D.	2
Operators	JLS, AA	Meter Box #	2	Impinger Out I.D.	3
Start Time	1115	Meter delta H	1.58	Nozzle Size	.243
End Time	1328	Meter Gamma	.992	XAD Trap I.D.	—

3.2

Leak Check Rates				
	Sample Rate in.	cfm	Pitot +	Pitot -
Initial	10	.000	✓	✓
Mid	7	.000	✓	✓
Mid				
Final	10	.000	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit							Vacuum (in. hg)	Comments/Notes
					Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet		
1	4	.31	.99	643.337	91	95	98	63	58	79	78	4	
2	8	.41	.99	646 —	91	95	99	52	56	81	78	4	ΔP .41 ΔH 1.3
3	12	.39	1.24	648.80	91	95	98	51	53	84	78	4	
4	16	.45	1.44	652.30	91	95	98	53	56	86	79	4	
5	20	.45	1.44	654 —	91	95	97	53	52	87	79	4	
6	24	.60	1.92	—	90	95	99	53	54	88	80	4	
7	28	.60	1.92	660.3	90	95	98	54	59	88	80	5	
8	32	.60	1.92	663.6	90	95	98	55	63	89	80	6	
9	36	.62	1.98	—	90	95	97	55	63	90	81	6	
10	40	.62	1.98	669.30	90	95	98	56	63	90	81	6	1203
11	44	.62	1.98	672.20	90	95	98	56	64	90	81	6	
12	48	.62	1.98	675.40	90	95	98	57	65	91	81	6	679.364
1	52	.60	1.92	679.718	87	90	98	67	59	82	81	6	679.718
2	56	.60	1.92	—	89	95	98	52	53	87	81	6	
3	60	.61	1.95	687.1	89	95	98	53	53	90	82	6	1240
4	64	.80	2.56	—	89	95	98	53	53	90	82	6	
5	68	.88	2.80	695 —	90	95	98	54	53	91	82	8	
6	72	.88	2.80	698.0	90	95	98	54	53	91	82	8	
7	76	.87	2.78	—	90	95	98	53	55	91	82	8	
8	80	.59	1.88	—	89	95	98	55	58	91	82	7	
9	84	.55	1.76	709.74	89	95	98	55	58	91	82	7	
10	88	.55	1.76	711.93	89	95	98	54	53	90	82	7	
11	92	.55	1.76	715.15	89	95	98	54	58	90	82	7	
12	96	.55	1.76	718.40	89	95	99	55	57	90	82	7	1328
				721.623									

Impinger Data (vol)		
#	Initial	Final
1	0	
2	100	
3	100	
4	0	
5	SiGel	
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		

C:\Stack\Field Data Forms\[Isokinetic\]Isokinetic Field Sheet.xls\Sheet1

RAMBOLL

EPA Isokinetic Field Sheet

Methods Performed: Modified 0010

Client	The Chemours Company	Run Number	2	Pitot Number	P4-3
Location	Fayetteville, NC	Stack Diameter	36"	Pitot Coefficient	.84
Source	OUTLET CB VEN	Barometric Pres.	30.03	Stack TC I.D.	P4-3
Date	6-25-20	Static Pressure	+3.1	Oven Box I.D.	2
Operators	JLS, AA	Meter Box #	2	Impinger Out I.D.	1
Start Time	1420	Meter delta H	1.58	Nozzle Size	.243
End Time	1638	Meter Gamma	.992	XAD Trap I.D.	—

Leak Check Rates	Sample Rate in.	Sample Rate cfm	Pitot +	Pitot -
Initial	8	.000	✓	✓
Mid	10	.000		
Mid				
Final	11	.000	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
1	4	.28	.89	721.947	89	95	98	58	48	83	82	4	
2	8	.28	.89	724.10	90	95	98	59	53	83	81	4	
3	12	.34	1.08	727—	89	95	98	59	53	83	81	4	
4	16	.36	1.15	730—	90	95	98	58	50	88	82	5	
5	20	.39	1.20	731—	89	95	98	59	51	88	82	5	
6	24	.60	1.92	—	89	95	98	60	55	88	82	5	
7	28	.60	1.92	736.40	89	95	98	61	59	89	82	5	
8	32	.60	1.92	739.40	89	95	98	63	60	90	82	5	
9	36	.63	2.01	743.2	89	95	98	64	53	91	83	5	
10	40	.63	2.01	—	90	95	97	61	52	93	84	6	
11	44	.60	1.92	748.30	90	95	98	60	54	93	84	6	
12	48	.60	1.92	751—	90	95	98	58	53	93	84	6	1508
1	52	.85	2.72	755.358	92	95	97	65	59	85	85	8	755.214
2	56	.85	2.72	759—	92	95	97	53	52	86	85	8	755.358
3	60	.87	2.78	763—	91	95	99	54	53	88	85	8	1550
4	64	.87	2.78	767.60	92	95	98	57	55	89	85	8	
5	68	.85	2.72	771—	91	96	99	59	55	91	85	8	
6	72	.62	1.98	776—	91	95	99	61	53	92	85	8	
7	76	.54	1.72	779.10	91	94	99	61	53	92	86	8	
8	80	.46	1.47	782.1	91	95	97	61	54	93	86	8.6	
9	84	.45	1.44	—	91	95	97	61	55	93	86	6	
10	88	.45	1.44	787—	91	95	98	62	55	93	86	6	
11	92	.45	1.44	790.0	91	95	96	63	55	93	87	6	
12	96	.45	1.44	792.60	91	95	98	63	57	94	87	6	1638
				795.613									

Impinger Data (vol) #	Initial	Final
1	0	
2	100	
3	100	
4	0	
5	SiGel	
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		

RAMBOLL

EPA Isokinetic Field Sheet

Methods Performed: Modified 0010

Client	The Chemours Company	Run Number	3	Pitot Number	P4-3
Location	Fayetteville, NC	Stack Diameter	36"	Pitot Coefficient	.84
Source	OUTLET CB VEN	Barometric Pres.	30.02	Stack TC I.D.	P4-3
Date	6-25-20	Static Pressure	+3.0	Oven Box I.D.	2
Operators	JLS AA	Meter Box #	2	Impinger Out I.D.	2
Start Time	1730	Meter delta H	1.58	Nozzle Size	.243
End Time		Meter Gamma	.992	XAD Trap I.D.	—

Leak Check Rates	Sample Rate in.	Sample Rate cfm	Pitot +	Pitot -
Initial	11	.000	✓	✓
Mid				
Mid				
Final				

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
1	4	.28	.89	795.965	92	94	98	63	63	87	87	4	K=3.2
2	8	.28	.89	798 —	92	95	97	56	60	89	87	4	
3	12	.34	1.08	—	91	95	98	55	61	91	87	4	
4	16	.52	1.66	803 —	91	95	98	54	61	92	87	5	
5	20	.64	2.04	806.7	91	95	98	54	61	93	87	5	
6	24	.64	2.04	—	92	95	98	55	60	94	88	5	
7	28	.64	2.04	813 —	92	95	98	54	59	94	88	6	
8	32	.65	2.08	—	92	95	98	54	57	93	88	6	(94)
9	36	.62	1.98	820 —	92	95	98	53	58	94	88	6	
10	40	.62	1.98	821.99	92	95	98	53	57	94	88	6	1818
11	44	.62	1.98	825.90	92	95	98	54	60	94	89	6	
12	48	.62	1.98	830 —	92	95	98	55	61	94	89	6	832.409
1	52	.75	2.40	832.835	92	95	97	66	62	89	89	6	832.835
2	56	.87	2.60	836 —	92	95	98	57	57	94	89	7	@1845
3	60	.82	2.60	839.2	92	95	98	54	59	96	89	8	
4	64	.89	2.84	844.60	92	95	98	58	61	97	90	9	
5	68	.90	2.88	—	92	95	98	58	61	98	90	1039	
6	72	.73	2.33	850.85	93	95	98	58	61	98	90	9	
7	76	.65	2.06	854.125	92	95	98	59	59	98	90	9	
8	80	.60	1.92	858.36	92	95	98	59	59	97	90	8.5	
9	84	.55	1.72	861.87	92	95	98	58	59	97	90	8	
10	88	.55	1.76	865.19	93	95	98	60	57	97	91	8	
11	92	.55	1.76	—	93	95	98	60	60	97	91	8	
12	96	.55	1.76	—	93	95	98	61	61	97	91	8	
				874.948									1953

Impinger Data (vol) #	Initial	Final
1	0	
2	100	
3	100	
4	0	
5	SiGel	
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		

RAMBOLL

Sample Train Recovery Data Sheet

Client Chemours Location Fayetteville, NC Source VEN OUTLET Method M0010 Date 6/25/20

Run # 1

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	519.2	512.0	7.2
Impinger #2	804.0	804.0	0
Impinger #3	769.4	768.6	0.8
Impinger #4	532.0	529.8	2.2
Impinger #5	864.4	851.2	13.2
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1
Filter #2
Filter #3
Run Start Time
Run End Time
Recovery Technician

Run # 2

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	516.0	508.4	7.6
Impinger #2	697.2	700.4	-3.2
Impinger #3	793.6	794.4	-0.8
Impinger #4	521.6	519.0	2.6
Impinger #5	897.6	877.4	20.2
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1
Filter #2
Filter #3
Run Start Time
Run End Time
Recovery Technician

Run # 3

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	521.0	513.0	8.0
Impinger #2	812.2	810.4	1.8
Impinger #3	784.2	784.6	-0.4
Impinger #4	530.2	529.2	1.0
Impinger #5	885.4	868.4	17.0
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1
Filter #2
Filter #3
Run Start Time
Run End Time
Recovery Technician

RAMBOLL

Nozzle Calibration Form

Plant I.D. Chemours Project No. 75812

Source I.D. Vinyl Ethers Personnel P. Grady

Date 6/22/20

Nozzle ID:	SS B
Diameter 1	.243
Diameter 2	.243
Diameter 3	.244
Average	.243

< 0.004" between high & low diameters

Cyclonic Flow Determination Data Sheet

Client	CHEMOURS	Stack Diameter	36"
Location	OUTLET CB VEN	Upstream Distance	
Source	FAYETTEVILLE NC	Downstream Distance	
Date	6-25-2020	Minimum Traverse Points	
Operator	JLS AA	Port Collar Length	

Leak Ck			
	Int. ✓	✓	
	Post ✓	✓	

Barometric Pressure	30.02
Probe ID	P4-3
Velocity Guage ID	B0x2
Static Pressure	+3.0
Time	

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (°F)	Angle at Null
1				5
2				10
3				10
4				5
5				10
6				15
7				15
8				10
9				10
10				10
11				5
12				5
1				10
2				5
3				15
4				10
5				10
6				5
7				10
8				17
9				10
10				10
11				15
12				15

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (°F)	Angle at Null

RAMBOLL

VEN Division Stack Field Test Data

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

	Run 1							Run 2							Run 3					
Traverse Point	Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P
A1	88	1.90	1.90	74	74	1.3784		87	2.00	2.00	80	79	1.4142		92	1.80	1.80	89	89	1.3416
1	87	1.90	1.90	77	74	1.3784		87	2.00	2.00	82	80	1.4142		92	1.90	1.90	92	89	1.3784
2	87	1.80	1.80	80	74	1.3416		88	1.80	1.80	85	80	1.3416		91	1.90	1.90	94	89	1.3784
2	87	1.80	1.80	81	74	1.3416		87	1.70	1.70	87	80	1.3038		91	1.80	1.80	96	89	1.3416
3	87	1.70	1.70	83	75	1.3038		87	1.70	1.70	88	80	1.3038		91	1.70	1.70	98	90	1.3038
3	87	1.70	1.70	85	76	1.3038		87	1.70	1.70	89	80	1.3038		92	1.70	1.70	99	91	1.3038
4	87	1.60	1.60	86	76	1.2649		87	1.60	1.60	90	80	1.2649		92	1.50	1.50	100	91	1.2247
4	87	1.70	1.70	86	76	1.3038		88	1.60	1.60	91	81	1.2649		92	1.60	1.60	100	91	1.2649
5	87	1.70	1.70	87	77	1.3038		88	1.70	1.70	92	82	1.3038		92	1.60	1.60	100	92	1.2649
5	87	1.70	1.70	87	77	1.3038		88	1.80	1.80	93	82	1.3416		91	1.70	1.70	100	92	1.3038
6	87	1.50	1.50	87	77	1.2247		89	1.80	1.80	94	83	1.3416		92	1.80	1.80	100	92	1.3416
6	87	1.50	1.50	88	82	1.2247		89	1.80	1.80	95	84	1.3416		92	1.80	1.80	100	92	1.3416
A1	87	1.60	1.60	77	77	1.2649		91	1.50	1.50	87	86	1.2247		92	1.50	1.50	92	90	1.2247
1	87	1.50	1.50	78	77	1.2247		90	1.50	1.50	89	87	1.2247		92	1.50	1.50	93	90	1.2247
2	87	1.60	1.60	79	77	1.2649		91	1.50	1.50	90	87	1.2247		92	1.50	1.50	94	90	1.2247
2	86	1.60	1.60	81	76	1.2649		90	1.60	1.60	92	87	1.2649		92	1.60	1.60	94	90	1.2649
3	87	1.70	1.70	82	77	1.3038		91	1.60	1.60	93	87	1.2649		92	1.70	1.70	96	90	1.3038
3	86	1.70	1.70	84	77	1.3038		91	1.60	1.60	94	87	1.2649		92	1.60	1.60	97	90	1.2649
4	87	1.80	1.80	84	77	1.3416		91	1.70	1.70	95	88	1.3038		92	1.70	1.70	97	90	1.3038
4	86	1.80	1.80	85	77	1.3416		91	1.60	1.60	96	88	1.2649		92	1.70	1.70	97	90	1.3038
5	86	1.90	1.90	85	77	1.3784		91	1.70	1.70	96	88	1.3038		92	1.90	1.90	97	90	1.3784
5	86	1.80	1.80	86	78	1.3416		91	1.80	1.80	96	88	1.3416		92	1.90	1.90	97	90	1.3784
6	86	1.90	1.90	87	78	1.3784		91	1.80	1.80	97	89	1.3416		92	1.80	1.80	97	90	1.3416
6	86	1.80	1.80	87	78	1.3416		91	1.90	1.90	97	89	1.3784		93	1.80	1.80	97	90	1.3416
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
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						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
Average	87	1.72	1.72	83	77	1.3093		89	1.71	1.71	91	84	1.3060		92	1.71	1.71	97	90	1.3060

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

Parameter	**Run 1**	**Run 2**	**Run 3**
Run Date	6/25/20	6/25/20	6/25/20
Start/Stop Time	1115-1328	1420-1638	1730-1933
Duration of Run, Minutes	96	96	96
Ave. Nozzle Diameter, inches	0.183	0.183	0.183
Pitot Calibration Factor, CF	0.84	0.84	0.84
Meter Gamma	0.999	0.999	0.999
Meter Delta H, inches of H2O	1.63	1.63	1.63
Stack Diameter, inches	34	34	34
Rectangular Width, inches	0	0	0
Rectangular Length, inches	0	0	0
Stack Area, sq.ft.	6.30	6.30	6.30
Barometric Pressure, inches of Hg	30.03	30.03	30.03
Static Pressure, inches of H2O	1.1	1.1	1.1
Dry Gas Meter Sample Volume, (VM)ft3			
Initial	662.525	734.987	808.222
Final	734.891	807.897	881.589
Total Volume	72.366	72.91	73.367
Ave. Stack Temperature, Ts(F)	86.8	89.3	91.9
Ave. Meter Temperature, Tm(F)	79.9	87.7	93.4
Ave. Run Delta H, inches of H2O	1.72	1.71	1.71
Ave. Square Root of Delta P	1.3093	1.3060	1.3060
Moisture Data			
Volume of water collected, mls	10.8	14.8	12.4
Silica Gel, grams	15.8	17.6	17
Total Collected, mls	26.6	32.4	29.4
ORSAT Data			
%O2	20.90	20.90	20.90
%CO2	0.0	0.0	0.0
%CO			

Calculations

Vw(std), scf =	1.252	1.525	1.384
Vm(std), dscf =	71.261	70.769	70.481
Bws=	0.017	0.021	0.019
Md=	28.84	28.84	28.84
Ms=	28.65	28.61	28.63
Vs, ft/sec =	74.9	74.9	75.0
Qs, acfm =	28,317	28,329	28,389
Qs(std), dscfm =	27,045	26,829	26,808
Isokinetic Sampling Rate, %	94.7	94.8	94.5

Where:
An = area of the nozzle
As = area of the stack
Vw(std) = volume of water vapor in gas, standard conditions = 0.04707*Vlc
Vm(std) = vol. of gas sampled, standard conditions = 17.647 x Vm x gamma x [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 x%CO2) + (0.32 x%O2) + [0.28 x (%N2 + %CO)]
Ms = molecular weight of stack gas, wet basis = [Md x (1-Bws)] + (18.0 x Bws)
Vs = stack gas velocity = 85.49 x Cp x (avg. Sq.Rt. dP) x [Sq.Rt. (Ts(R))/(Ms x Ps)]
Qs = stack gas flow rate = Vs x As x 60
Qs(std) = stack gas flow rate, standard conditions = Qs x (1-Bws) x (528/(Ts(R)) x (Ps/29.92)
Isokinetic sampling rate = {(Ts(R)) x [(0.00267 x Vlc) + (Vm(std)/17.647)] x 100}/(Time x vs x Ps x An x60)

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

Parameter:		Run 1				Run 2				Run 3				Average			
	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	0.02447	1.21E-02	8.83E-04	1.23E-03	0.01796	8.96E-03	6.53E-04	9.01E-04	0.01996	1.00E-02	7.28E-04	1.00E-03	0.02	1.04E-02	7.55E-04	1.04E-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 Stack
Fayetteville, North Carolina
Note: Values are shown for example purposes only.

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

Initial gas meter volume:	662.525
Final gas meter volume:	734.891
Difference:	72.366

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

= 17.647x Vm, a x Gamma*[Pbar+(DeltaH/13.6)]/Tm(R)
= 17.647 x 0.000 x 0.999 x (30.03 + [(1.630 /13.6) / 540
= 71.261

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

impinger catch (mls):	11
silica gel (g)	15.8
total:	26.6

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

= (0.04707) x (Vl,c)
= 0.04707 x 26.6
= 1.252

Bwo = Proportion by volume of water vapor in gas stream

= Vw,std/(Vw,std+Vm,std)
= 1.25 / (1.25 + 71.261)
= 0.017

Ps = Stack gas static pressure (in. Hg)

= St/13.6
= 1.10 / 13.6
= 0.081

Pa = Absolute stack gas pressure (in. Hg)

= Ps+Pbar
= 0.081 + 30.03
= 30.11

MFD = Dry mole fraction of stack gas

= 1-Bwo
= 1 - 0.017
= 0.983

Md = 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

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

= (Md) x (MFD) + (0.18) x (Bwo*100)
= 28.84 x 0.983 + 0.18 x 1.72666
= 28.65

Example Calculations

The Chemours Company - Fayetteville Works
Vinyl Ethers North Carbon Bed Outlet Stack
Fayetteville, North Carolina
Note: Values are shown for example purposes only.

Vs,avg = **Average stack gas velocity (fps)**

= Kp x (Cp) x (sqrt,deltaP) x sqrt((Ts + 460°R)/Mw*Pa))
= 85.48 x 0.84 x 1.31 x sqrt (0.63)
= 74.8

A **Cross sectional areas of stack (sq. ft)**

= pi/4*d^2
= 3.14159/4 x 2.83 ^2
= 6.30

Qa **Volumetric flow rate at actual conditions (acfm)**

= (60)sec/min(A)(Vs, avg)
= 60 x 6.3050 x 74.85
= 28,315

Qstd **Volumetric flow rate at standard conditions (scfm)**

= Qa x (528/Ts,avg + 460) x Pa/29.92
= 28,315 x (528 / 547) x 1.006
= 27,518

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

= Qstd x (1-Bwo)
= 27,518 x 0.9827
= 27,043

mg/dscm **HFPO-DA concentration**

= (mg/dscf) x 35.314 cu. ft./cu. meter
= (0.02 / 71.26) x 35.314
= 1.21E-02

lb/hr **HFPO-DA Mass Emission Rate**

= mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr
= 0.02 / 1,000 /[453.59) / 71.26)] x 27,045 x 60
= 1.23E-03

EPA Isokinetic Field Sheet

Methods Performed: Modified 0010

Client	The Chemours Company	Run Number	1	Pitot Number	P4-1
Location	Fayetteville, NC	Stack Diameter	34	Pitot Coefficient	.84
Source	STACK	Barometric Pres.	30.03	Stack TC I.D.	P4-1
Date	6/25/20	Static Pressure	1.1	Oven Box I.D.	OB-1
Operators	EA/JW	Meter Box #	11	Impinger Out I.D.	IO-8
Start Time	1115 / 1240	Meter delta H	1.663	Nozzle Size	.183
End Time	1203 / 1330	Meter Gamma	.994	XAD Trap I.D.	NA

Leak Check Rates	Sample Rate in.	Sample Rate cfm	Pitot +	Pitot -
Initial	8	0.00	✓	✓
Mid				
Mid				
Final	7	0.00	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
A1	4	1.9	1.9	662.525	88	97	96	64	62	74	74	4	
1	8	1.9	1.9	665.7	87	97	95	62	57	77	74	4	
2	12	1.8	1.8	668.7	87	97	96	61	57	80	74	4	
2	16	1.8	1.8	671.9	87	97	96	59	56	81	74	4	
3	20	1.7	1.7	674.9	87	97	95	58	56	83	75	4	
3	24	1.7	1.7	-	87	96	95	54	57	45	76	4	
4	28	1.6	1.6	684.0	87	97	95	53	56	86	76	4	
4	32	1.7	1.7	686.9	87	97	96	53	57	86	76	4	
5	36	1.7	1.7	690.0	87	98	95	53	56	87	77	4	
5	40	1.7	1.7	692.9	87	97	95	54	57	87	77	4	
6	44	1.5	1.5	696.1	87	96	95	53	62	87	77	4	
6	48	1.5	1.5	-	87	97	95	54	62	88	87	4	
1	52	1.6	1.6	698.938	87	97	95	66	60	77	77	4	
1	56	1.5	1.5	702.0	87	97	96	53	60	78	77	4	
2	60	1.6	1.6	704.7	87	97	95	52	59	79	77	4	
2	64	1.6	1.6	707.8	86	97	94	54	55	81	76	4	
3	68	1.7	1.7	710.5	87	97	95	54	55	82	77	4	
3	72	1.7	1.7	713.4	86	97	95	55	57	84	77	4	
4	76	1.8	1.8	716.6	87	97	95	55	52	84	77	4	
4	80	1.8	1.8	719.3	86	98	97	55	51	85	77	4	
5	84	1.9	1.9	722.3	86	98	97	55	51	85	77	5	
5	88	1.8	1.8	725.3	86	99	97	55	51	86	78	5	
6	92	1.9	1.9	728.6	86	101	98	55	54	87	78	5	
6	96	1.8	1.8	731.7	86	99	96	55	53	87	78	5	
				734.891									

Impinger Data (vol) #	Initial	Final
1	0	
2	100	
3	100	
4	0	
5	SiGel	
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		

RAMBOLL

EPA Isokinetic Field Sheet

Methods Performed: Modified 0010

Client	The Chemours Company	Run Number	2	Pitot Number	04-1
Location	Fayetteville, NC	Stack Diameter	34	Pitot Coefficient	0.84
Source	STACK	Barometric Pres.	30.03	Stack TC I.D.	04-1
Date	6/25/20	Static Pressure	1.1	Oven Box I.D.	08-2
Operators	EA/NW	Meter Box #	11	Impinger Out I.D.	IO-8
Start Time	1420	Meter delta H	1.163	Nozzle Size	.183
End Time	1550 / 1638	Meter Gamma	.99	XAD Trap I.D.	N/A

Leak Check Rates	Sample Rate in.	Sample Rate cfm	Pitot +	Pitot -
Initial	9	0.001	✓	✓
Mid				
Mid				
Final	8	.002	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
A1	4	2.0	2.0	734.987	87	96	95	67	63	80	79	4	
1	8	2.0	2.0	738.1	87	97	97	63	46	82	80	4	
2	12	1.8	1.8	741.3	88	97	95	60	47	85	80	4	
2	16	1.7	1.7	744.4	87	97	95	61	46	87	80	4	
3	20	1.7	1.7	747.5	87	97	95	61	47	88	80	5	
3	24	1.7	1.7	750.6	87	97	95	63	48	89	80	5	
4	28	1.6	1.6	753.6	87	98	95	63	51	90	80	5	
4	32	1.6	1.6	756.7	88	97	95	64	49	91	81	5	
5	36	1.7	1.7	759.7	88	97	95	62	46	92	82	6	
5	40	1.8	1.8	762.8	88	98	96	60	45	93	82	7	
6	44	1.8	1.8	765.9	89	98	96	56	47	94	83	7	
6	48	1.8	1.8	769.1	89	98	97	56	47	95	84	7	
1	52	1.5	1.5	772.308	91	97	95	64	62	87	86	6	
1	56	1.5	1.5	775.1	90	97	95	58	53	89	87	6	
2	60	1.5	1.5	777.9	91	97	95	58	52	90	87	6	
2	64	1.6	1.6	780.7	90	97	95	58	50	92	87	7	
3	68	1.6	1.6	—	91	97	95	57	50	93	87	7	
3	72	1.6	1.6	786.6	91	97	95	60	50	94	87	7	
4	76	1.7	1.7	789.3	91	97	95	58	50	95	88	7	
4	80	1.6	1.6	—	91	97	95	58	50	96	88	7	
5	84	1.7	1.7	—	91	97	95	57	50	96	88	7	
5	88	1.8	1.8	798.3	91	97	95	57	50	96	88	7	
6	92	1.8	1.8	801.7	91	97	95	59	51	97	89	7	
6	96	1.9	1.9	804.7	91	97	95	60	51	97	88	7	
				807.897									

Impinger Data (vol) #	Initial	Final
1	0	
2	100	
3	100	
4	0	
5	SiGel	
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: Modified 0010

Client	The Chemours Company	Run Number	3	Pitot Number	P4-1
Location	Fayetteville, NC	Stack Diameter	34	Pitot Coefficient	.84
Source	STACK	Barometric Pres.	++	Stack TC I.D.	P4-1
Date	6/25/20	Static Pressure	1.1	Oven Box I.D.	OB-1
Operators	EA/NW	Meter Box #	11	Impinger Out I.D.	IO-8
Start Time	1730 1845	Meter delta H	1.63	Nozzle Size	.185
End Time	1939	Meter Gamma	.999	XAD Trap I.D.	n/a

Leak Check Rates				
	Sample Rate		Pitot	
	in.	cfm	+	-
Initial	9	0.00	✓	✓
Mid				
Mid				
Final	10	.000	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit							Vacuum (in. hg)	Comments/Notes
					Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet		
1	4	1.8	1.8	808.222	92	98	99	66	64	89	89	5	
1	8	1.9	1.9	811.3	92	97	95	64	63	92	89	5	
2	12	1.9	1.9	814.4	91	97	95	62	59	94	89	5	
2	16	1.8	1.8	817.60	91	97	95	62	58	96	89	5	
3	20	1.7	1.7	820.8	91	97	95	62	55	98	90	5	
3	24	1.7	1.7	824.0	92	97	96	60	55	99	91	5	
4	28	1.5	1.5	827.2	92	98	96	60	56	100	91	5	
4	32	1.6	1.6	830.2	92	98	96	61	56	100	91	5	
5	36	1.6	1.6	833.2	92	98	97	62	57	100	92	5	
5	40	1.7	1.7	836.0	91	97	97	62	57	100	92	5	
6	44	1.8	1.8	839.0	92	98	99	62	56	100	92	5	
6	48	1.8	1.8	842.4	92	98	99	62	57	100	92	5	
1	52	1.5	1.5	845560	92	97	96	63	59	92	90	5	
1	56	1.5	1.5	848.4	92	97	95	62	58	93	90	5	
2	60	1.5	1.5	—	92	97	96	62	59	94	90	5	
2	64	1.6	1.6	—	92	98	97	60	58	94	90	5	
3	68	1.7	1.7	856.9	93	97	95	59	58	96	90	5	
3	72	1.6	1.6	860.2	92	97	95	58	57	97	90	5	
4	76	1.7	1.7	—	92	97	96	57	56	97	90	5	
4	80	1.7	1.7	866.2	92	98	96	56	56	97	90	5	
5	84	1.9	1.9	869.2	92	98	98	56	55	97	90	5	
5	88	1.9	1.9	872.4	92	98	98	56	55	97	90	5	
6	92	1.8	1.8	875.6	92	97	98	56	56	97	90	5	
6	96	1.8	1.8	878.9	93	97	99	55	55	97	90	5	
				881.589									

Impinger Data (vol)		
#	Initial	Final
1	0	
2	100	
3	100	
4	0	
5	SiGel	
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	20.9	0
2		
3		
Avg		

RAMBOLL

Sample Train Recovery Data Sheet

Client Chemours Location Fayetteville, NC Source VEN Stack Method M0010 Date 6/25/20

Run # 1

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	500.4	491.2	9.2
Impinger #2	752.4	754.2	-1.8
Impinger #3	767.2	767.6	-0.4
Impinger #4	505.0	501.2	3.8
Impinger #5	848.2	~~684.0~~ 832.4 (FC)	15.8
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1
Filter #2
Filter #3
Run Start Time
Run End Time
Recovery Technician

Run # 2

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	490.2	483.6	6.6
Impinger #2	799.8	801.6	-1.8
Impinger #3	769.0	769.2	-0.2
Impinger #4	542.6	532.4	10.2
Impinger #5	818.0	800.4	17.6
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1
Filter #2
Filter #3
Run Start Time
Run End Time
Recovery Technician

Run # 3

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	503.6	490.6	13.0
Impinger #2	752.6	754.6	-2.0
Impinger #3	772.0	772.2	-0.2
Impinger #4	508.8	502.2	1.6
Impinger #5	898.0	881.0	17.0
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1
Filter #2
Filter #3
Run Start Time
Run End Time
Recovery Technician

Cyclonic Flow Determination Data Sheet

Client: Stack Chemistry
Location: Fayetteville NC
Source: Stack Division
Date: 10/25/20
Operator:

Stack Diameter: 34
Upstream Distance:
Downstream Distance:
Minimum Traverse Points: 6
Port Collar Length:

Leak Ck	Int.	✓	✓
	Post	✓	✓

Barometric Pressure:
Probe ID: P4-1
Velocity Guage ID:
Static Pressure:
Time:

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (^{0}F)	Angle at Null
1				5
2				0
3				0
4				5
5				5
6				0

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (^{0}F)	Angle at Null

RAMBOLL

APPENDIX D
LABORATORY DATA

eurofins | Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 140-19506-1
Client Project/Site: VEN Carbon Ben Inlet - HFPO-DA

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

Attn: Michael Aucoin

Authorized for release by:
7/13/2020 2:03:04 PM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

Table of Contents

Definitions/Glossary

Client: The Chemours Company FC, LLC
Job ID: 140-19506-1
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Qualifiers

LCMS

Qualifier	Qualifier Description
*5	Isotope dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.

Glossary

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

Job ID: 140-19506-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-19506-1

Sample Receipt

The samples were received on June 26, 2020 at 2:50 PM in good condition and properly preserved. The temperature of the cooler at receipt was 0.6º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

LCMS

Method 537 (modified): Results for samples K-2141 M0010 VEN CB INLET R1 IMPINGERS 1,2&3 COND (140-19506-3), K-2148 M0010 VEN CB INLET R2 IMPINGERS 1,2&3 COND (140-19506-7) and K-2155 M0010 VEN CB INLET R3 IMPINGERS 1,2&3 COND (140-19506-11) 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): Results for samples K-2137,2138 M0010 VEN CB INLET R1 FH (140-19506-1), K-2144,2145 M0010 VEN CB INLET R2 FH (140-19506-5) and K-2151,2152 M0010 VEN CB INLET R3 FH (140-19506-9) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The method blanks for preparation batch 140-40652 and 140-40721 and analytical batch 140-40787 contained HFPO-DA above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method 537 (modified): Results for samples K-2139,2140,2142 M0010 VEN CB INLET R1 BH (140-19506-2), K-2143 M0010 VEN CB INLET R1 BREAKTHROUGH XAD-2 RESIN TUBE (140-19506-4), K-2146,2147,2149 M0010 VEN CB INLET R2 BH (140-19506-6), K-2150 M0010 VEN CB INLET R2 BREAKTHROUGH XAD-2 RESIN TUBE (140-19506-8), K-2153,2154,2156 M0010 VEN CB INLET R3 BH (140-19506-10) and K-2157 M0010 VEN CB INLET R3 BREAKTHROUGH XAD-2 RESIN TUBE (140-19506-12) 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): K-2137,2138 M0010 VEN CB INLET R1 FH (140-19506-1), K-2144,2145 M0010 VEN CB INLET R2 FH (140-19506-5) and K-2151,2152 M0010 VEN CB INLET R3 FH (140-19506-9). 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 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): K-2139,2140,2142 M0010 VEN CB INLET R1 BH (140-19506-2), K-2146,2147,2149 M0010 VEN CB INLET R2 BH (140-19506-6) and K-2153,2154,2156 M0010 VEN CB INLET R3 BH (140-19506-10). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

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

Organic Prep

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 Carbon Ben Inlet - HFPO-DA

Job ID: 140-19506-1

Client Sample ID: K-2137,2138 M0010 VEN CB INLET R1 FH — Lab Sample ID: 140-19506-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	20.3	E B	0.0500	0.0250	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	280	B	2.00	1.00	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: K-2139,2140,2142 M0010 VEN CB INLET R1 BH — Lab Sample ID: 140-19506-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	18.1	E B	0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	1320	B	16.0	16.0	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: K-2141 M0010 VEN CB INLET R1 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-19506-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	116		3.68	3.68	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: K-2143 M0010 VEN CB INLET R1 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-19506-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	3.55	B	0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: K-2144,2145 M0010 VEN CB INLET R2 FH — Lab Sample ID: 140-19506-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	19.5	E B	0.0500	0.0250	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	153	B	2.00	1.00	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: K-2146,2147,2149 M0010 VEN CB INLET R2 BH — Lab Sample ID: 140-19506-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	18.7	E B	0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	987	B	16.0	16.0	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: K-2148 M0010 VEN CB INLET R2 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-19506-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	93.9		4.46	4.46	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: K-2150 M0010 VEN CB INLET R2 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-19506-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.92	B	0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: K-2151,2152 M0010 VEN CB INLET R3 FH — Lab Sample ID: 140-19506-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	19.5	E B	0.0500	0.0250	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	191	B	2.00	1.00	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 Carbon Ben Inlet - HFPO-DA

Job ID: 140-19506-1

Client Sample ID: K-2153,2154,2156 M0010 VEN CB INLET R3 BH

Lab Sample ID: 140-19506-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	19.7	E B	0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	2720	B	32.0	32.0	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: K-2155 M0010 VEN CB INLET R3 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19506-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	155		4.11	4.11	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: K-2157 M0010 VEN CB INLET R3 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19506-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	3.57	B	0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: K-2137,2138 M0010 VEN CB INLET R1 FH
Lab Sample ID: 140-19506-1

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	20.3	E B	0.0500	0.0250	ug/Sample		06/30/20 07:30	07/05/20 17:54	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*603*	**5*	*25 - 150*	*06/30/20 07:30*	*07/05/20 17:54*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	280	B	2.00	1.00	ug/Sample		06/30/20 07:30	07/07/20 13:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*89*		*25 - 150*	*06/30/20 07:30*	*07/07/20 13:02*	*1*

Client Sample ID: K-2139,2140,2142 M0010 VEN CB INLET R1 BH
Lab Sample ID: 140-19506-2

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	18.1	E B	0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 17:51	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*1399*	**5*	*25 - 150*	*06/29/20 12:07*	*07/07/20 17:51*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1320	B	16.0	16.0	ug/Sample		06/29/20 12:07	07/11/20 13:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*88*		*25 - 150*	*06/29/20 12:07*	*07/11/20 13:08*	*1*

Client Sample ID: K-2141 M0010 VEN CB INLET R1 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-19506-3

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	116		3.68	3.68	ug/Sample		06/30/20 13:59	07/02/20 14:52	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*96*		*25 - 150*	*06/30/20 13:59*	*07/02/20 14:52*	*50*

Client Sample ID: K-2143 M0010 VEN CB INLET R1 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19506-4

Date Collected: 06/25/20 00:00
Date Received: 06/26/20 14:50
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	3.55	B	0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 18:08	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*120*		*25 - 150*	*06/29/20 12:07*	*07/07/20 18:08*	*50*

Client Sample ID: K-2144,2145 M0010 VEN CB INLET R2 FH

Lab Sample ID: 140-19506-5

Date Collected: 06/25/20 00:00
Date Received: 06/26/20 14:50
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	19.5	E B	0.0500	0.0250	ug/Sample		06/30/20 07:30	07/05/20 18:03	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*507*	*5	*25 - 150*	*06/30/20 07:30*	*07/05/20 18:03*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	153	B	2.00	1.00	ug/Sample		06/30/20 07:30	07/07/20 13:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*88*		*25 - 150*	*06/30/20 07:30*	*07/07/20 13:11*	*1*

Client Sample ID: K-2146,2147,2149 M0010 VEN CB INLET R2 BH

Lab Sample ID: 140-19506-6

Date Collected: 06/25/20 00:00
Date Received: 06/26/20 14:50
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	18.7	E B	0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 18:26	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*1131*	*5	*25 - 150*	*06/29/20 12:07*	*07/07/20 18:26*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	987	B	16.0	16.0	ug/Sample		06/29/20 12:07	07/11/20 13:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*86*		*25 - 150*	*06/29/20 12:07*	*07/11/20 13:17*	*1*

Client Sample ID: K-2148 M0010 VEN CB INLET R2 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19506-7

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	93.9		4.46	4.46	ug/Sample		06/30/20 13:59	07/02/20 15:01	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*97*		*25 - 150*	*06/30/20 13:59*	*07/02/20 15:01*	*50*

Client Sample ID: K-2150 M0010 VEN CB INLET R2 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19506-8

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.92	B	0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 18:43	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*25 - 150*	*06/29/20 12:07*	*07/07/20 18:43*	*50*

Client Sample ID: K-2151,2152 M0010 VEN CB INLET R3 FH

Lab Sample ID: 140-19506-9

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	19.5	E B	0.0500	0.0250	ug/Sample		06/30/20 07:30	07/05/20 18:11	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*541*	**5*	*25 - 150*	*06/30/20 07:30*	*07/05/20 18:11*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	191	B	2.00	1.00	ug/Sample		06/30/20 07:30	07/07/20 13:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*91*		*25 - 150*	*06/30/20 07:30*	*07/07/20 13:19*	*1*

Client Sample ID: K-2153,2154,2156 M0010 VEN CB INLET R3 BH

Lab Sample ID: 140-19506-10

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	19.7	E B	0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 19:01	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*1412*	**5*	*25 - 150*	*06/29/20 12:07*	*07/07/20 19:01*	*50*

Client Sample ID: K-2153,2154,2156 M0010 VEN CB INLET R3 BH

Lab Sample ID: 140-19506-10

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2720	B	32.0	32.0	ug/Sample		06/29/20 12:07	07/11/20 13:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*87*		*25 - 150*	*06/29/20 12:07*	*07/11/20 13:25*	*1*

Client Sample ID: K-2155 M0010 VEN CB INLET R3 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19506-11

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	155		4.11	4.11	ug/Sample		06/30/20 13:59	07/02/20 15:10	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*104*		*25 - 150*	*06/30/20 13:59*	*07/02/20 15:10*	*50*

Client Sample ID: K-2157 M0010 VEN CB INLET R3 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19506-12

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	3.57	B	0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 19:19	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*105*		*25 - 150*	*06/29/20 12:07*	*07/07/20 19:19*	*50*

Default Detection Limits

Client: The Chemours Company FC, LLC
Job ID: 140-19506-1
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00100	0.000500	ug/Sample
HFPO-DA	0.00160	0.00160	ug/Sample
HFPO-DA	0.000700	0.000700	ug/Sample

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Job ID: 140-19506-1

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)
140-19506-1	K-2137,2138 M0010 VEN CB IN	603 *5
140-19506-1 - DL	K-2137,2138 M0010 VEN CB INLET R1 FH	89
140-19506-2	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	1399 *5
140-19506-2 - DL	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	88
140-19506-3	K-2141 M0010 VEN CB INLET R1 IMPINGERS 1,2&3 COND	96
140-19506-4	K-2143 M0010 VEN CB INLET R1 BREAKTHROUGH XAD-2 RESIN TUBE	120
140-19506-5	K-2144,2145 M0010 VEN CB INLET R2 FH	507 *5
140-19506-5 - DL	K-2144,2145 M0010 VEN CB INLET R2 FH	88
140-19506-6	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	1131 *5
140-19506-6 - DL	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	86
140-19506-7	K-2148 M0010 VEN CB INLET R2 IMPINGERS 1,2&3 COND	97
140-19506-8	K-2150 M0010 VEN CB INLET R2 BREAKTHROUGH XAD-2 RESIN TUBE	100
140-19506-9	K-2151,2152 M0010 VEN CB INLET R3 FH	541 *5
140-19506-9 - DL	K-2151,2152 M0010 VEN CB INLET R3 FH	91
140-19506-10	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	1412 *5
140-19506-10 - DL	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	87
140-19506-11	K-2155 M0010 VEN CB INLET R3 IMPINGERS 1,2&3 COND	104
140-19506-12	K-2157 M0010 VEN CB INLET R3 BREAKTHROUGH XAD-2 RESIN TUBE	105
LCS 140-40642/2-B	Lab Control Sample	76
LCS 140-40652/2-B	Lab Control Sample	77
LCS 140-40695/2-B	Lab Control Sample	98
LCSD 140-40642/3-B	Lab Control Sample Dup	77
LCSD 140-40652/3-B	Lab Control Sample Dup	76
LCSD 140-40695/3-B	Lab Control Sample Dup	95
MB 140-40642/1-B	Method Blank	70
MB 140-40652/14-B	Method Blank	73
MB 140-40652/1-B	Method Blank	77
MB 140-40695/1-B	Method Blank	93

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-40642/1-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40642

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.002645		0.00160	0.00160	ug/Sample		06/29/20 12:07	07/07/20 15:17	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*70*		*25 - 150*	*06/29/20 12:07*	*07/07/20 15:17*	*1*

Lab Sample ID: LCS 140-40642/2-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40642

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.01939	B	ug/Sample		97	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*76*		*25 - 150*

Lab Sample ID: LCSD 140-40642/3-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40642

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02011	B	ug/Sample		101	60 - 140	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*77*		*25 - 150*

Lab Sample ID: MB 140-40652/14-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40652

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001330		0.00100	0.000500	ug/Sample		06/30/20 07:30	07/05/20 17:27	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*73*		*25 - 150*	*06/30/20 07:30*	*07/05/20 17:27*	*1*

Lab Sample ID: MB 140-40652/1-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40652

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001856		0.00100	0.000500	ug/Sample		06/30/20 07:30	07/05/20 17:19	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*77*		*25 - 150*	*06/30/20 07:30*	*07/05/20 17:19*	*1*

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

Lab Sample ID: LCS 140-40652/2-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40652

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.02110		ug/Sample		106	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*77*		*25 - 150*

Lab Sample ID: LCSD 140-40652/3-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40652

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02297		ug/Sample		115	60 - 140	8	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*76*		*25 - 150*

Lab Sample ID: MB 140-40695/1-B
Matrix: Air
Analysis Batch: 40723

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40695

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000700	0.000700	ug/Sample		06/30/20 13:59	07/01/20 16:51	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*93*		*25 - 150*	*06/30/20 13:59*	*07/01/20 16:51*	*1*

Lab Sample ID: LCS 140-40695/2-B
Matrix: Air
Analysis Batch: 40723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40695

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0100	0.008513		ug/Sample		85	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*98*		*25 - 150*

Lab Sample ID: LCSD 140-40695/3-B
Matrix: Air
Analysis Batch: 40723

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40695

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.009504		ug/Sample		95	60 - 140	11	30

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

LCMS

Prep Batch: 40642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-2	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	Total/NA	Air	None	
140-19506-2 - DL	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	Total/NA	Air	None	
140-19506-4	K-2143 M0010 VEN CB INLET R1 BREAKTHRO	Total/NA	Air	None	
140-19506-6	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	Total/NA	Air	None	
140-19506-6 - DL	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	Total/NA	Air	None	
140-19506-8	K-2150 M0010 VEN CB INLET R2 BREAKTHRO	Total/NA	Air	None	
140-19506-10 - DL	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	Total/NA	Air	None	
140-19506-10	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	Total/NA	Air	None	
140-19506-12	K-2157 M0010 VEN CB INLET R3 BREAKTHRO	Total/NA	Air	None	
MB 140-40642/1-B	Method Blank	Total/NA	Air	None	
LCS 140-40642/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-40642/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 40652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-1 - DL	K-2137,2138 M0010 VEN CB INLET R1 FH	Total/NA	Air	None	
140-19506-1	K-2137,2138 M0010 VEN CB INLET R1 FH	Total/NA	Air	None	
140-19506-5 - DL	K-2144,2145 M0010 VEN CB INLET R2 FH	Total/NA	Air	None	
140-19506-5	K-2144,2145 M0010 VEN CB INLET R2 FH	Total/NA	Air	None	
140-19506-9 - DL	K-2151,2152 M0010 VEN CB INLET R3 FH	Total/NA	Air	None	
140-19506-9	K-2151,2152 M0010 VEN CB INLET R3 FH	Total/NA	Air	None	
MB 140-40652/14-B	Method Blank	Total/NA	Air	None	
MB 140-40652/1-B	Method Blank	Total/NA	Air	None	
LCS 140-40652/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-40652/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 40695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-3	K-2141 M0010 VEN CB INLET R1 IMPINGERS 1	Total/NA	Air	None	
140-19506-7	K-2148 M0010 VEN CB INLET R2 IMPINGERS 1	Total/NA	Air	None	
140-19506-11	K-2155 M0010 VEN CB INLET R3 IMPINGERS 1	Total/NA	Air	None	
MB 140-40695/1-B	Method Blank	Total/NA	Air	None	
LCS 140-40695/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-40695/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 40700

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-3	K-2141 M0010 VEN CB INLET R1 IMPINGERS 1	Total/NA	Air	Split	40695
140-19506-7	K-2148 M0010 VEN CB INLET R2 IMPINGERS 1	Total/NA	Air	Split	40695
140-19506-11	K-2155 M0010 VEN CB INLET R3 IMPINGERS 1	Total/NA	Air	Split	40695
MB 140-40695/1-B	Method Blank	Total/NA	Air	Split	40695
LCS 140-40695/2-B	Lab Control Sample	Total/NA	Air	Split	40695
LCSD 140-40695/3-B	Lab Control Sample Dup	Total/NA	Air	Split	40695

Cleanup Batch: 40721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-1	K-2137,2138 M0010 VEN CB INLET R1 FH	Total/NA	Air	Split	40652
140-19506-1 - DL	K-2137,2138 M0010 VEN CB INLET R1 FH	Total/NA	Air	Split	40652
140-19506-5	K-2144,2145 M0010 VEN CB INLET R2 FH	Total/NA	Air	Split	40652
140-19506-5 - DL	K-2144,2145 M0010 VEN CB INLET R2 FH	Total/NA	Air	Split	40652
140-19506-9	K-2151,2152 M0010 VEN CB INLET R3 FH	Total/NA	Air	Split	40652

LCMS (Continued)

Cleanup Batch: 40721 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-9 - DL	K-2151,2152 M0010 VEN CB INLET R3 FH	Total/NA	Air	Split	40652
MB 140-40652/14-B	Method Blank	Total/NA	Air	Split	40652
MB 140-40652/1-B	Method Blank	Total/NA	Air	Split	40652
LCS 140-40652/2-B	Lab Control Sample	Total/NA	Air	Split	40652
LCSD 140-40652/3-B	Lab Control Sample Dup	Total/NA	Air	Split	40652

Analysis Batch: 40723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-40695/1-B	Method Blank	Total/NA	Air	537 (modified)	40700
LCS 140-40695/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	40700
LCSD 140-40695/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	40700

Cleanup Batch: 40734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-2	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	Total/NA	Air	Split	40642
140-19506-2 - DL	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	Total/NA	Air	Split	40642
140-19506-4	K-2143 M0010 VEN CB INLET R1 BREAKTHRO	Total/NA	Air	Split	40642
140-19506-6	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	Total/NA	Air	Split	40642
140-19506-6 - DL	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	Total/NA	Air	Split	40642
140-19506-8	K-2150 M0010 VEN CB INLET R2 BREAKTHRO	Total/NA	Air	Split	40642
140-19506-10 - DL	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	Total/NA	Air	Split	40642
140-19506-10	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	Total/NA	Air	Split	40642
140-19506-12	K-2157 M0010 VEN CB INLET R3 BREAKTHRO	Total/NA	Air	Split	40642
MB 140-40642/1-B	Method Blank	Total/NA	Air	Split	40642
LCS 140-40642/2-B	Lab Control Sample	Total/NA	Air	Split	40642
LCSD 140-40642/3-B	Lab Control Sample Dup	Total/NA	Air	Split	40642

Analysis Batch: 40759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-3	K-2141 M0010 VEN CB INLET R1 IMPINGERS 1	Total/NA	Air	537 (modified)	40700
140-19506-7	K-2148 M0010 VEN CB INLET R2 IMPINGERS 1	Total/NA	Air	537 (modified)	40700
140-19506-11	K-2155 M0010 VEN CB INLET R3 IMPINGERS 1	Total/NA	Air	537 (modified)	40700

Analysis Batch: 40787

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-1	K-2137,2138 M0010 VEN CB INLET R1 FH	Total/NA	Air	537 (modified)	40721
140-19506-5	K-2144,2145 M0010 VEN CB INLET R2 FH	Total/NA	Air	537 (modified)	40721
140-19506-9	K-2151,2152 M0010 VEN CB INLET R3 FH	Total/NA	Air	537 (modified)	40721
MB 140-40652/14-B	Method Blank	Total/NA	Air	537 (modified)	40721
MB 140-40652/1-B	Method Blank	Total/NA	Air	537 (modified)	40721
LCS 140-40652/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	40721
LCSD 140-40652/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	40721

Cleanup Batch: 40818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-1 - DL	K-2137,2138 M0010 VEN CB INLET R1 FH	Total/NA	Air	Dilution	40721
140-19506-5 - DL	K-2144,2145 M0010 VEN CB INLET R2 FH	Total/NA	Air	Dilution	40721
140-19506-9 - DL	K-2151,2152 M0010 VEN CB INLET R3 FH	Total/NA	Air	Dilution	40721

QC Association Summary

Client: The Chemours Company FC, LLC
Job ID: 140-19506-1
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

LCMS

Analysis Batch: 40859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-1 - DL	K-2137,2138 M0010 VEN CB INLET R1 FH	Total/NA	Air	537 (modified)	40818
140-19506-2	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	Total/NA	Air	537 (modified)	40734
140-19506-4	K-2143 M0010 VEN CB INLET R1 BREAKTHRO	Total/NA	Air	537 (modified)	40734
140-19506-5 - DL	K-2144,2145 M0010 VEN CB INLET R2 FH	Total/NA	Air	537 (modified)	40818
140-19506-6	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	Total/NA	Air	537 (modified)	40734
140-19506-8	K-2150 M0010 VEN CB INLET R2 BREAKTHRO	Total/NA	Air	537 (modified)	40734
140-19506-9 - DL	K-2151,2152 M0010 VEN CB INLET R3 FH	Total/NA	Air	537 (modified)	40818
140-19506-10	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	Total/NA	Air	537 (modified)	40734
140-19506-12	K-2157 M0010 VEN CB INLET R3 BREAKTHRO	Total/NA	Air	537 (modified)	40734
MB 140-40642/1-B	Method Blank	Total/NA	Air	537 (modified)	40734
LCS 140-40642/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	40734
LCSD 140-40642/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	40734

Cleanup Batch: 40953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-2 - DL	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	Total/NA	Air	Dilution	40734
140-19506-6 - DL	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	Total/NA	Air	Dilution	40734
140-19506-10 - DL	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	Total/NA	Air	Dilution	40734

Analysis Batch: 40957

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19506-2 - DL	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	Total/NA	Air	537 (modified)	40953
140-19506-6 - DL	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	Total/NA	Air	537 (modified)	40953
140-19506-10 - DL	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	Total/NA	Air	537 (modified)	40953

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Job ID: 140-19506-1

Client Sample ID: K-2137,2138 M0010 VEN CB INLET R1 FH

Lab Sample ID: 140-19506-1

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	130 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			65 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40787	07/05/20 17:54	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	130 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		65 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		5 uL	10000 uL	40818	07/06/20 13:27	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40859	07/07/20 13:02	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: K-2139,2140,2142 M0010 VEN CB INLET R1 BH

Lab Sample ID: 140-19506-2

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 17:51	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		1 uL	10000 uL	40953	07/10/20 17:08	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40957	07/11/20 13:08	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: K-2141 M0010 VEN CB INLET R1 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19506-3

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00952 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40759	07/02/20 14:52	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Job ID: 140-19506-1
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Client Sample ID: K-2143 M0010 VEN CB INLET R1 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-19506-4

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 18:08	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: K-2144,2145 M0010 VEN CB INLET R2 FH
Lab Sample ID: 140-19506-5

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	130 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			65 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40787	07/05/20 18:03	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	130 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		65 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		5 uL	10000 uL	40818	07/06/20 13:27	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40859	07/07/20 13:11	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: K-2146,2147,2149 M0010 VEN CB INLET R2 BH
Lab Sample ID: 140-19506-6

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 18:26	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		1 uL	10000 uL	40953	07/10/20 17:08	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40957	07/11/20 13:17	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Job ID: 140-19506-1
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Client Sample ID: K-2148 M0010 VEN CB INLET R2 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-19506-7

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00784 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40759	07/02/20 15:01	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: K-2150 M0010 VEN CB INLET R2 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-19506-8

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 18:43	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: K-2151,2152 M0010 VEN CB INLET R3 FH
Lab Sample ID: 140-19506-9

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	88 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			44 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40787	07/05/20 18:11	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	88 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		44 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		5 uL	10000 uL	40818	07/06/20 13:27	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40859	07/07/20 13:19	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: K-2153,2154,2156 M0010 VEN CB INLET R3 BH
Lab Sample ID: 140-19506-10

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 19:01	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Job ID: 140-19506-1
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Client Sample ID: K-2153,2154,2156 M0010 VEN CB INLET R3 BH

Lab Sample ID: 140-19506-10

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	DL		1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		0.5 uL	10000 uL	40953	07/10/20 17:08	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40957	07/11/20 13:25	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: K-2155 M0010 VEN CB INLET R3 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19506-11

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00851 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40759	07/02/20 15:10	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: K-2157 M0010 VEN CB INLET R3 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19506-12

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 19:19	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Method Blank

Lab Sample ID: MB 140-40642/1-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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:17	JRC	TAL KNX

Instrument ID: LCA

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Job ID: 140-19506-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-40652/14-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	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:27	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-40652/1-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	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:19	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-40695/1-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	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 16:51	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-40642/2-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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:35	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-40652/2-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	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:36	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Job ID: 140-19506-1

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

Lab Sample ID: LCS 140-40695/2-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 17:10	JRC	TAL KNX
	Instrument ID: LCA									

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

Lab Sample ID: LCSD 140-40642/3-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:43	JRC	TAL KNX
	Instrument ID: LCA									

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

Lab Sample ID: LCSD 140-40652/3-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:45	JRC	TAL KNX
	Instrument ID: LCA									

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

Lab Sample ID: LCSD 140-40695/3-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 17:19	JRC	TAL KNX
	Instrument ID: LCA									

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

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
Job ID: 140-19506-1
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
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	07-31-20
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	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
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	08-31-20

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Ben Inlet - HFPO-DA

Job ID: 140-19506-1

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 XAD	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 Carbon Ben Inlet - HFPO-DA

Job ID: 140-19506-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-19506-1	K-2137,2138 M0010 VEN CB INLET R1 FH	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-2	K-2139,2140,2142 M0010 VEN CB INLET R1 BH	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-3	K-2141 M0010 VEN CB INLET R1 IMPINGERS 1,2&3 COND	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-4	K-2143 M0010 VEN CB INLET R1 BREAKTHROUGH XAD-2 RESIN TUBE	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-5	K-2144,2145 M0010 VEN CB INLET R2 FH	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-6	K-2146,2147,2149 M0010 VEN CB INLET R2 BH	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-7	K-2148 M0010 VEN CB INLET R2 IMPINGERS 1,2&3 COND	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-8	K-2150 M0010 VEN CB INLET R2 BREAKTHROUGH XAD-2 RESIN TUBE	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-9	K-2151,2152 M0010 VEN CB INLET R3 FH	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-10	K-2153,2154,2156 M0010 VEN CB INLET R3 BH	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-11	K-2155 M0010 VEN CB INLET R3 IMPINGERS 1,2&3 COND	Air	06/25/20 00:00	06/26/20 14:50	
140-19506-12	K-2157 M0010 VEN CB INLET R3 BREAKTHROUGH XAD-2 RESIN TUBE	Air	06/25/20 00:00	06/26/20 14:50	

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

eurofins 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

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

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	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 Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
HFPO-DA (CAS No. 13252-13-6)	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
K-2137 VEN CB Inlet R1 M0010 Filter (Combine with *K-2138*)	1	6/25/20		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.
K-2138 VEN CB Inlet R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *K-2137*)	1	6/25/20		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. 140-19506 Chain of Custody
K-2139 VEN CB Inlet R1 M0010 XAD-2 Resin Tube	1	6/25/20		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.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
K-2140 VEN CB Inlet R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *K-2139*)	1	6/25/20		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.
K-2141 VEN CB Inlet R1 M0010 Impingers 1,2 & 3 Condensate	1	6/25/20		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.
K-2142 VEN CB Inlet R1 M0010 Impinger Glassware MeOH Rinse (Combine with *K-2139*)	1	6/25/20		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.
K-2143 VEN CB Inlet R1 M0010 Breakthrough XAD-2 Resin Tube	1	6/25/20		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.
K-2144 VEN CB Inlet R2 M0010 Filter (Combine with *K-2145*)	2	6/25/20		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.
K-2145 VEN CB Inlet R2 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *K-2144*)	2	6/25/20		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.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
K-2146 VEN CB Inlet R2 M0010 XAD-2 Resin Tube	2	6/25/20		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.
K-2147 VEN CB Inlet R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *K-2146*)	2	6/25/20		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.
K-2148 VEN CB Inlet R2 M0010 Impingers 1,2 & 3 Condensate	2	6/25/20		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.
K-2149 VEN CB Inlet R2 M0010 Impinger Glassware MeOH Rinse (Combine with *K-2146*)	2	6/25/20		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.
K-2150 VEN CB Inlet R2 M0010 Breakthrough XAD-2 Resin Tube	2	6/25/20		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.
K-2151 VEN CB Inlet R3 M0010 Filter (Combine with *K-2152*)	3	6/25/20		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.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
K-2152 VEN CB Inlet R3 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *K-2151*)	3	6/25/20		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.
K-2153 VEN CB Inlet R3 M0010 XAD-2 Resin Tube	3	6/25/20		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.
K-2154 VEN CB Inlet R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *K-2153*)	3	6/25/20		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.
K-2155 VEN CB Inlet R3 M0010 Impingers 1,2 & 3 Condensate	3	6/25/20		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.
K-2156 VEN CB Inlet R3 M0010 Impinger Glassware MeOH Rinse (Combine with *K-2153*)	3	6/25/20		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.
K-2157 VEN CB Inlet R3 M0010 Breakthrough XAD-2 Resin Tube	3	6/25/20		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.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 0.6 / CT 0.6
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	HAND DELIVERED, NO CUSTODY SEALS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Patrick Yurdy	Ramboll	6/25/20 21:00
Accepted By:	Wm. C. Anderson	Eurofins T.A.	6/25/20 21:00
Relinquished By:	Wm. C. Anderson	Eurofins T.A.	6/26/20 14:50
Accepted By:	Tonya Cannon	FEDEX	6.26.20 14:50
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Loc: 140
19506

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

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓		✓	☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: 0.0	✓ ✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓ ✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓ ✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓		✓	☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?	✓			☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓ ✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓ ✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

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

Project #: 14004326 PM Instructions:

Sample Receiving Associate: Date: 6-28-20

QA026R32.doc, 062719

7/13/2020

eurofins | Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 140-19507-1
Client Project/Site: VEN Carbon Bed Outlet - HFPO-DA

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

Attn: Michael Aucoin

Authorized for release by:
7/13/2020 2:03:23 PM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

Table of Contents

Definitions/Glossary

Client: The Chemours Company FC, LLC
Job ID: 140-19507-1
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Qualifiers

LCMS

Qualifier	Qualifier Description
*5	Isotope dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.

Glossary

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

Job ID: 140-19507-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-19507-1

Sample Receipt

The samples were received on 6/26/2020 2:50 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.6º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

LCMS

Method 537 (modified): Results for samples Q-1937,1938 M0010 VEN CB OUTLET R1 FH (140-19507-1), Q-1944,1945 M0010 VEN CB OUTLET R2 FH (140-19507-5) and Q-1951,1952 M0010 VEN CB OUTLET R3 FH (140-19507-9) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The method blanks for preparation batch 140-40652 and 140-40721 and analytical batch 140-40787 contained HFPO-DA above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

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): Q-1937,1938 M0010 VEN CB OUTLET R1 FH (140-19507-1), Q-1944,1945 M0010 VEN CB OUTLET R2 FH (140-19507-5) and Q-1951,1952 M0010 VEN CB OUTLET R3 FH (140-19507-9). 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): Results for samples Q-1939,1940,1942 M0010 VEN CB OUTLET R1 BH (140-19507-2), Q-1946,1947,1949 M0010 VEN CB OUTLET R2 BH (140-19507-6) and Q-1953,1954,1956 M0010 VEN CB OUTLET R3 BH (140-19507-10) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

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

Organic Prep

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 Carbon Bed Outlet - HFPO-DA

Job ID: 140-19507-1

Client Sample ID: Q-1937,1938 M0010 VEN CB OUTLET R1 FH — Lab Sample ID: 140-19507-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	15.0	E B	0.0500	0.0250	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	31.2	B	0.200	0.100	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1939,1940,1942 M0010 VEN CB OUTLET R1 BH — Lab Sample ID: 140-19507-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	12.3	E B	0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	25.6	B	0.800	0.800	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1941 M0010 VEN CB OUTLET R1 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-19507-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.602		0.0805	0.0805	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1943 M0010 VEN CB OUTLET R1 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-19507-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0366	B	0.00160	0.00160	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1944,1945 M0010 VEN CB OUTLET R2 FH — Lab Sample ID: 140-19507-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	10.8	E B	0.0500	0.0250	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	17.6	B	0.200	0.100	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1946,1947,1949 M0010 VEN CB OUTLET R2 BH — Lab Sample ID: 140-19507-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	3.55	B	0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: Q-1948 M0010 VEN CB OUTLET R2 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-19507-7

No Detections.

Client Sample ID: Q-1950 M0010 VEN CB OUTLET R2 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-19507-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0132	B	0.00160	0.00160	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1951,1952 M0010 VEN CB OUTLET R3 FH — Lab Sample ID: 140-19507-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	10.1	E B	0.0500	0.0250	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	15.0	B	0.200	0.100	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Job ID: 140-19507-1

Client Sample ID: Q-1953,1954,1956 M0010 VEN CB OUTLET R3 BH

Lab Sample ID: 140-19507-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	7.12		0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: Q-1955 M0010 VEN CB OUTLET R3 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19507-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.27		0.0910	0.0910	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1957 M0010 VEN CB OUTLET R3 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19507-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0847	B	0.00160	0.00160	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: Q-1937,1938 M0010 VEN CB OUTLET R1 FH
Lab Sample ID: 140-19507-1

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	15.0	E B	0.0500	0.0250	ug/Sample		06/30/20 07:30	07/05/20 18:20	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	172	*5	25 - 150	06/30/20 07:30	07/05/20 18:20	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	31.2	B	0.200	0.100	ug/Sample		06/30/20 07:30	07/06/20 17:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	95		25 - 150	06/30/20 07:30	07/06/20 17:57	1

Client Sample ID: Q-1939,1940,1942 M0010 VEN CB OUTLET R1 BH
Lab Sample ID: 140-19507-2

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	12.3	E B	0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 19:36	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	173	*5	25 - 150	06/29/20 12:07	07/07/20 19:36	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	25.6	B	0.800	0.800	ug/Sample		06/29/20 12:07	07/10/20 21:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	84		25 - 150	06/29/20 12:07	07/10/20 21:08	1

Client Sample ID: Q-1941 M0010 VEN CB OUTLET R1 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-19507-3

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.602		0.0805	0.0805	ug/Sample		06/30/20 13:59	07/02/20 14:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	91		25 - 150	06/30/20 13:59	07/02/20 14:33	1

Client Sample ID: Q-1943 M0010 VEN CB OUTLET R1 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19507-4

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0366	B	0.00160	0.00160	ug/Sample		06/29/20 12:07	07/10/20 19:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*70*		*25 - 150*	*06/29/20 12:07*	*07/10/20 19:21*	*1*

Client Sample ID: Q-1944,1945 M0010 VEN CB OUTLET R2 FH

Lab Sample ID: 140-19507-5

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	10.8	E B	0.0500	0.0250	ug/Sample		06/30/20 07:30	07/05/20 18:55	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*138*		*25 - 150*	*06/30/20 07:30*	*07/05/20 18:55*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	17.6	B	0.200	0.100	ug/Sample		06/30/20 07:30	07/06/20 18:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*88*		*25 - 150*	*06/30/20 07:30*	*07/06/20 18:08*	*1*

Client Sample ID: Q-1946,1947,1949 M0010 VEN CB OUTLET R2 BH

Lab Sample ID: 140-19507-6

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	3.55	B	0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 20:31	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*119*		*25 - 150*	*06/29/20 12:07*	*07/07/20 20:31*	*50*

Client Sample ID: Q-1948 M0010 VEN CB OUTLET R2 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19507-7

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.0840	0.0840	ug/Sample		06/30/20 13:59	07/01/20 18:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*96*		*25 - 150*	*06/30/20 13:59*	*07/01/20 18:03*	*1*

Client Sample ID: Q-1950 M0010 VEN CB OUTLET R2 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19507-8

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0132	B	0.00160	0.00160	ug/Sample		06/29/20 12:07	07/10/20 19:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	67		25 - 150	06/29/20 12:07	07/10/20 19:30	1

Client Sample ID: Q-1951,1952 M0010 VEN CB OUTLET R3 FH

Lab Sample ID: 140-19507-9

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	10.1	E B	0.0500	0.0250	ug/Sample		06/30/20 07:30	07/05/20 19:04	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	127		25 - 150	06/30/20 07:30	07/05/20 19:04	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	15.0	B	0.200	0.100	ug/Sample		06/30/20 07:30	07/06/20 18:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		25 - 150	06/30/20 07:30	07/06/20 18:17	1

Client Sample ID: Q-1953,1954,1956 M0010 VEN CB OUTLET R3 BH

Lab Sample ID: 140-19507-10

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	7.12		0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 21:06	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	136		25 - 150	06/29/20 12:07	07/07/20 21:06	50

Client Sample ID: Q-1955 M0010 VEN CB OUTLET R3 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19507-11

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.27		0.0910	0.0910	ug/Sample		06/30/20 13:59	07/01/20 18:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	94		25 - 150	06/30/20 13:59	07/01/20 18:12	1

Client: The Chemours Company FC, LLC
Job ID: 140-19507-1
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Client Sample ID: Q-1957 M0010 VEN CB OUTLET R3 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-19507-12
Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0847	B	0.00160	0.00160	ug/Sample		06/29/20 12:07	07/10/20 19:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*68*		*25 - 150*	*06/29/20 12:07*	*07/10/20 19:39*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Job ID: 140-19507-1
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00100	0.000500	ug/Sample
HFPO-DA	0.00160	0.00160	ug/Sample
HFPO-DA	0.000700	0.000700	ug/Sample

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Job ID: 140-19507-1

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)							
140-19507-1	Q-1937,1938 M0010 VEN CB O	172 *5							
140-19507-1 - DL	Q-1937,1938 M0010 VEN CB OUTLET R1 FH	95							
140-19507-2	Q-1939,1940,1942 M0010 VEN CB OUTLET R1 BH	173 *5							
140-19507-2 - DL	Q-1939,1940,1942 M0010 VEN CB OUTLET R1 BH	84							
140-19507-3	Q-1941 M0010 VEN CB OUTLET R1 IMPINGERS 1,2&3 COND	91							
140-19507-4	Q-1943 M0010 VEN CB OUTLET R1 BREAKTHROUGH XAD-2 RESIN TUBE	70							
140-19507-5	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	138							
140-19507-5 - DL	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	88							
140-19507-6	Q-1946,1947,1949 M0010 VEN CB OUTLET R2 BH	119							
140-19507-7	Q-1948 M0010 VEN CB OUTLET R2 IMPINGERS 1,2&3 COND	96							
140-19507-8	Q-1950 M0010 VEN CB OUTLET R2 BREAKTHROUGH XAD-2 RESIN TUBE	67							
140-19507-9	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	127							
140-19507-9 - DL	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	92							
140-19507-10	Q-1953,1954,1956 M0010 VEN CB OUTLET R3 BH	136							
140-19507-11	Q-1955 M0010 VEN CB OUTLET R3 IMPINGERS 1,2&3 COND	94							
140-19507-12	Q-1957 M0010 VEN CB OUTLET R3 BREAKTHROUGH XAD-2 RESIN TUBE	68							
LCS 140-40642/2-B	Lab Control Sample	76							
LCS 140-40652/2-B	Lab Control Sample	77							
LCS 140-40695/2-B	Lab Control Sample	98							
LCSD 140-40642/3-B	Lab Control Sample Dup	77							
LCSD 140-40652/3-B	Lab Control Sample Dup	76							
LCSD 140-40695/3-B	Lab Control Sample Dup	95							
MB 140-40642/14-B	Method Blank	75							
MB 140-40642/1-B	Method Blank	70							
MB 140-40652/14-B	Method Blank	73							
MB 140-40652/1-B	Method Blank	77							
MB 140-40695/1-B	Method Blank	93							

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-40642/14-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40642

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00160	ug/Sample		06/29/20 12:07	07/07/20 15:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*75*		*25 - 150*	*06/29/20 12:07*	*07/07/20 15:26*	*1*

Lab Sample ID: MB 140-40642/1-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40642

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.002645		0.00160	0.00160	ug/Sample		06/29/20 12:07	07/07/20 15:17	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*70*		*25 - 150*	*06/29/20 12:07*	*07/07/20 15:17*	*1*

Lab Sample ID: LCS 140-40642/2-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40642

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.01939	B	ug/Sample		97	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*76*		*25 - 150*

Lab Sample ID: LCSD 140-40642/3-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40642

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02011	B	ug/Sample		101	60 - 140	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*77*		*25 - 150*

Lab Sample ID: MB 140-40652/14-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40652

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001330		0.00100	0.000500	ug/Sample		06/30/20 07:30	07/05/20 17:27	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*73*		*25 - 150*	*06/30/20 07:30*	*07/05/20 17:27*	*1*

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

Lab Sample ID: MB 140-40652/1-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40652

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001856		0.00100	0.000500	ug/Sample		06/30/20 07:30	07/05/20 17:19	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*77*		*25 - 150*	*06/30/20 07:30*	*07/05/20 17:19*	*1*

Lab Sample ID: LCS 140-40652/2-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40652

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.02110		ug/Sample		106	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*77*		*25 - 150*

Lab Sample ID: LCSD 140-40652/3-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40652

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02297		ug/Sample		115	60 - 140	8	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*76*		*25 - 150*

Lab Sample ID: MB 140-40695/1-B
Matrix: Air
Analysis Batch: 40723

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40695

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000700	0.000700	ug/Sample		06/30/20 13:59	07/01/20 16:51	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*93*		*25 - 150*	*06/30/20 13:59*	*07/01/20 16:51*	*1*

Lab Sample ID: LCS 140-40695/2-B
Matrix: Air
Analysis Batch: 40723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40695

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0100	0.008513		ug/Sample		85	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*98*		*25 - 150*

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Job ID: 140-19507-1

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

Lab Sample ID: LCSD 140-40695/3-B
Matrix: Air
Analysis Batch: 40723

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40695

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.009504		ug/Sample		95	60 - 140	11	30

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

LCMS

Prep Batch: 40642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-2 - DL	Q-1939,1940,1942 M0010 VEN CB OUTLET R1	Total/NA	Air	None	
140-19507-2	Q-1939,1940,1942 M0010 VEN CB OUTLET R1	Total/NA	Air	None	
140-19507-4	Q-1943 M0010 VEN CB OUTLET R1 BREAKTHF	Total/NA	Air	None	
140-19507-6	Q-1946,1947,1949 M0010 VEN CB OUTLET R2	Total/NA	Air	None	
140-19507-8	Q-1950 M0010 VEN CB OUTLET R2 BREAKTHF	Total/NA	Air	None	
140-19507-10	Q-1953,1954,1956 M0010 VEN CB OUTLET R3	Total/NA	Air	None	
140-19507-12	Q-1957 M0010 VEN CB OUTLET R3 BREAKTHF	Total/NA	Air	None	
MB 140-40642/14-B	Method Blank	Total/NA	Air	None	
MB 140-40642/1-B	Method Blank	Total/NA	Air	None	
LCS 140-40642/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-40642/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 40652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-1 - DL	Q-1937,1938 M0010 VEN CB OUTLET R1 FH	Total/NA	Air	None	
140-19507-1	Q-1937,1938 M0010 VEN CB OUTLET R1 FH	Total/NA	Air	None	
140-19507-5 - DL	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	Total/NA	Air	None	
140-19507-5	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	Total/NA	Air	None	
140-19507-9	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	Total/NA	Air	None	
140-19507-9 - DL	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	Total/NA	Air	None	
MB 140-40652/14-B	Method Blank	Total/NA	Air	None	
MB 140-40652/1-B	Method Blank	Total/NA	Air	None	
LCS 140-40652/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-40652/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 40695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-3	Q-1941 M0010 VEN CB OUTLET R1 IMPINGER	Total/NA	Air	None	
140-19507-7	Q-1948 M0010 VEN CB OUTLET R2 IMPINGER	Total/NA	Air	None	
140-19507-11	Q-1955 M0010 VEN CB OUTLET R3 IMPINGER	Total/NA	Air	None	
MB 140-40695/1-B	Method Blank	Total/NA	Air	None	
LCS 140-40695/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-40695/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 40700

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-3	Q-1941 M0010 VEN CB OUTLET R1 IMPINGER	Total/NA	Air	Split	40695
140-19507-7	Q-1948 M0010 VEN CB OUTLET R2 IMPINGER	Total/NA	Air	Split	40695
140-19507-11	Q-1955 M0010 VEN CB OUTLET R3 IMPINGER	Total/NA	Air	Split	40695
MB 140-40695/1-B	Method Blank	Total/NA	Air	Split	40695
LCS 140-40695/2-B	Lab Control Sample	Total/NA	Air	Split	40695
LCSD 140-40695/3-B	Lab Control Sample Dup	Total/NA	Air	Split	40695

Cleanup Batch: 40721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-1 - DL	Q-1937,1938 M0010 VEN CB OUTLET R1 FH	Total/NA	Air	Split	40652
140-19507-1	Q-1937,1938 M0010 VEN CB OUTLET R1 FH	Total/NA	Air	Split	40652
140-19507-5 - DL	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	Total/NA	Air	Split	40652
140-19507-5	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	Total/NA	Air	Split	40652
140-19507-9	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	Total/NA	Air	Split	40652
140-19507-9 - DL	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	Total/NA	Air	Split	40652

LCMS (Continued)

Cleanup Batch: 40721 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-40652/14-B	Method Blank	Total/NA	Air	Split	40652
MB 140-40652/1-B	Method Blank	Total/NA	Air	Split	40652
LCS 140-40652/2-B	Lab Control Sample	Total/NA	Air	Split	40652
LCSD 140-40652/3-B	Lab Control Sample Dup	Total/NA	Air	Split	40652

Analysis Batch: 40723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-7	Q-1948 M0010 VEN CB OUTLET R2 IMPINGER	Total/NA	Air	537 (modified)	40700
140-19507-11	Q-1955 M0010 VEN CB OUTLET R3 IMPINGER	Total/NA	Air	537 (modified)	40700
MB 140-40695/1-B	Method Blank	Total/NA	Air	537 (modified)	40700
LCS 140-40695/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	40700
LCSD 140-40695/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	40700

Cleanup Batch: 40734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-2 - DL	Q-1939,1940,1942 M0010 VEN CB OUTLET R1	Total/NA	Air	Split	40642
140-19507-2	Q-1939,1940,1942 M0010 VEN CB OUTLET R1	Total/NA	Air	Split	40642
140-19507-4	Q-1943 M0010 VEN CB OUTLET R1 BREAKTHF	Total/NA	Air	Split	40642
140-19507-6	Q-1946,1947,1949 M0010 VEN CB OUTLET R2	Total/NA	Air	Split	40642
140-19507-8	Q-1950 M0010 VEN CB OUTLET R2 BREAKTHF	Total/NA	Air	Split	40642
140-19507-10	Q-1953,1954,1956 M0010 VEN CB OUTLET R3	Total/NA	Air	Split	40642
140-19507-12	Q-1957 M0010 VEN CB OUTLET R3 BREAKTHF	Total/NA	Air	Split	40642
MB 140-40642/14-B	Method Blank	Total/NA	Air	Split	40642
MB 140-40642/1-B	Method Blank	Total/NA	Air	Split	40642
LCS 140-40642/2-B	Lab Control Sample	Total/NA	Air	Split	40642
LCSD 140-40642/3-B	Lab Control Sample Dup	Total/NA	Air	Split	40642

Analysis Batch: 40759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-3	Q-1941 M0010 VEN CB OUTLET R1 IMPINGER	Total/NA	Air	537 (modified)	40700

Analysis Batch: 40787

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-1	Q-1937,1938 M0010 VEN CB OUTLET R1 FH	Total/NA	Air	537 (modified)	40721
140-19507-5	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	Total/NA	Air	537 (modified)	40721
140-19507-9	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	Total/NA	Air	537 (modified)	40721
MB 140-40652/14-B	Method Blank	Total/NA	Air	537 (modified)	40721
MB 140-40652/1-B	Method Blank	Total/NA	Air	537 (modified)	40721
LCS 140-40652/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	40721
LCSD 140-40652/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	40721

Analysis Batch: 40811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-1 - DL	Q-1937,1938 M0010 VEN CB OUTLET R1 FH	Total/NA	Air	537 (modified)	40818
140-19507-5 - DL	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	Total/NA	Air	537 (modified)	40818
140-19507-9 - DL	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	Total/NA	Air	537 (modified)	40818

Cleanup Batch: 40818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-1 - DL	Q-1937,1938 M0010 VEN CB OUTLET R1 FH	Total/NA	Air	Dilution	40721
140-19507-5 - DL	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	Total/NA	Air	Dilution	40721

LCMS (Continued)

Cleanup Batch: 40818 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-9 - DL	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	Total/NA	Air	Dilution	40721

Analysis Batch: 40859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-2	Q-1939,1940,1942 M0010 VEN CB OUTLET R1	Total/NA	Air	537 (modified)	40734
140-19507-6	Q-1946,1947,1949 M0010 VEN CB OUTLET R2	Total/NA	Air	537 (modified)	40734
140-19507-10	Q-1953,1954,1956 M0010 VEN CB OUTLET R3	Total/NA	Air	537 (modified)	40734
MB 140-40642/14-B	Method Blank	Total/NA	Air	537 (modified)	40734
MB 140-40642/1-B	Method Blank	Total/NA	Air	537 (modified)	40734
LCS 140-40642/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	40734
LCSD 140-40642/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	40734

Analysis Batch: 40951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-2 - DL	Q-1939,1940,1942 M0010 VEN CB OUTLET R1	Total/NA	Air	537 (modified)	40953
140-19507-4	Q-1943 M0010 VEN CB OUTLET R1 BREAKTHF	Total/NA	Air	537 (modified)	40734
140-19507-8	Q-1950 M0010 VEN CB OUTLET R2 BREAKTHF	Total/NA	Air	537 (modified)	40734
140-19507-12	Q-1957 M0010 VEN CB OUTLET R3 BREAKTHF	Total/NA	Air	537 (modified)	40734

Cleanup Batch: 40953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19507-2 - DL	Q-1939,1940,1942 M0010 VEN CB OUTLET R1	Total/NA	Air	Dilution	40734

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Job ID: 140-19507-1

Client Sample ID: Q-1937,1938 M0010 VEN CB OUTLET R1 FH

Lab Sample ID: 140-19507-1

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	116 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			58 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40787	07/05/20 18:20	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	116 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		58 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		50 uL	10000 uL	40818	07/06/20 13:27	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40811	07/06/20 17:57	CLJ	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Q-1939,1940,1942 M0010 VEN CB OUTLET R1 BH

Lab Sample ID: 140-19507-2

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 19:36	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		20 uL	10000 uL	40953	07/10/20 17:08	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40951	07/10/20 21:08	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Q-1941 M0010 VEN CB OUTLET R1 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19507-3

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.0087 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40759	07/02/20 14:33	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Job ID: 140-19507-1
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Client Sample ID: Q-1943 M0010 VEN CB OUTLET R1 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-19507-4

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40951	07/10/20 19:21	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Q-1944,1945 M0010 VEN CB OUTLET R2 FH
Lab Sample ID: 140-19507-5

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	124 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			62 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40787	07/05/20 18:55	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	124 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		62 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		50 uL	10000 uL	40818	07/06/20 13:27	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40811	07/06/20 18:08	CLJ	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Q-1946,1947,1949 M0010 VEN CB OUTLET R2 BH
Lab Sample ID: 140-19507-6

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 20:31	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Q-1948 M0010 VEN CB OUTLET R2 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-19507-7

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00833 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 18:03	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Job ID: 140-19507-1
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Client Sample ID: Q-1950 M0010 VEN CB OUTLET R2 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-19507-8

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40951	07/10/20 19:30	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Q-1951,1952 M0010 VEN CB OUTLET R3 FH
Lab Sample ID: 140-19507-9

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	110 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			55 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40787	07/05/20 19:04	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	110 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		55 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		50 uL	10000 uL	40818	07/06/20 13:27	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40811	07/06/20 18:17	CLJ	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Q-1953,1954,1956 M0010 VEN CB OUTLET R3 BH
Lab Sample ID: 140-19507-10

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 21:06	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Q-1955 M0010 VEN CB OUTLET R3 IMPINGERS 1,2&3 COND
Lab Sample ID: 140-19507-11

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00769 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 18:12	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Job ID: 140-19507-1

Client Sample ID: Q-1957 M0010 VEN CB OUTLET R3 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19507-12

Date Collected: 06/25/20 00:00
Date Received: 06/26/20 14:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40951	07/10/20 19:39	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-40642/14-B

Date Collected: N/A
Date Received: N/A

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:26	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-40642/1-B

Date Collected: N/A
Date Received: N/A

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:17	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-40652/14-B

Date Collected: N/A
Date Received: N/A

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:27	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-40652/1-B

Date Collected: N/A
Date Received: N/A

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:19	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Job ID: 140-19507-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-40695/1-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	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 16:51	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-40642/2-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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:35	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-40652/2-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	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:36	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-40695/2-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	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 17:10	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-40642/3-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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:43	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Job ID: 140-19507-1
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-40652/3-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	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:45	JRC	TAL KNX

Instrument ID: LCA

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-40695/3-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	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 17:19	JRC	TAL KNX

Instrument ID: LCA

Laboratory References:

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

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
Job ID: 140-19507-1
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
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	07-31-20
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	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
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	08-31-20

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN Carbon Bed Outlet - HFPO-DA

Job ID: 140-19507-1

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 XAD	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 Carbon Bed Outlet - HFPO-DA

Job ID: 140-19507-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-19507-1	Q-1937,1938 M0010 VEN CB OUTLET R1 FH	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-2	Q-1939,1940,1942 M0010 VEN CB OUTLET R1 BH	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-3	Q-1941 M0010 VEN CB OUTLET R1 IMPINGER 1,2&3 COND	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-4	Q-1943 M0010 VEN CB OUTLET R1 BREAKTHROUGH XAD-2 RESIN TUBE	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-5	Q-1944,1945 M0010 VEN CB OUTLET R2 FH	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-6	Q-1946,1947,1949 M0010 VEN CB OUTLET R2 BH	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-7	Q-1948 M0010 VEN CB OUTLET R2 IMPINGER 1,2&3 COND	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-8	Q-1950 M0010 VEN CB OUTLET R2 BREAKTHROUGH XAD-2 RESIN TUBE	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-9	Q-1951,1952 M0010 VEN CB OUTLET R3 FH	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-10	Q-1953,1954,1956 M0010 VEN CB OUTLET R3 BH	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-11	Q-1955 M0010 VEN CB OUTLET R3 IMPINGER 1,2&3 COND	Air	06/25/20 00:00	06/26/20 14:50	
140-19507-12	Q-1957 M0010 VEN CB OUTLET R3 BREAKTHROUGH XAD-2 RESIN TUBE	Air	06/25/20 00:00	06/26/20 14:50	

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

eurofins 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

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

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	Hand Deliver

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

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
HFPO-DA (CAS No. 13252-13-6)	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1937 VEN CB Outlet R1 M0010 Filter (Combine with *Q-1938*)	1	6/25/20		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.
Q-1938 VEN CB Outlet R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *Q-1937*)	1	6/25/20		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. 140-19507 Chain of Custody
Q-1939 VEN CB Outlet R1 M0010 XAD-2 Resin Tube	1	6/25/20		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.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1940 VEN CB Outlet R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *Q-1939*)	1	6/25/20		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.
Q-1941 VEN CB Outlet R1 M0010 Impingers 1,2 & 3 Condensate	1	6/25/20		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.
Q-1942 VEN CB Outlet R1 M0010 Impinger Glassware MeOH Rinse (Combine with *Q-1939*)	1	6/25/20		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.
Q-1943 VEN CB Outlet R1 M0010 Breakthrough XAD-2 Resin Tube	1	6/25/20		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.
Q-1944 VEN CB Outlet R2 M0010 Filter (Combine with *Q-1945*)	2	6/25/20		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.
Q-1945 VEN CB Outlet R2 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *Q-1944*)	2	6/25/20		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.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1946 VEN CB Outlet R2 M0010 XAD-2 Resin Tube	2	6/25/20		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.
Q-1947 VEN CB Outlet R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *Q-1947*)	2	6/25/20		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.
Q-1948 VEN CB Outlet R2 M0010 Impingers 1,2 & 3 Condensate	2	6/25/20		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.
Q-1949 VEN CB Outlet R2 M0010 Impinger Glassware MeOH Rinse (Combine with *Q-1947*)	2	6/25/20		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.
Q-1950 VEN CB Outlet R2 M0010 Breakthrough XAD-2 Resin Tube	2	6/25/20		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.
Q-1951 VEN CB Outlet R3 M0010 Filter (Combine with *Q-1952*)	3	6/25/20		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.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1952 VEN CB Outlet R3 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *Q-1951*)	3	6/25/20		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.
Q-1953 VEN CB Outlet R3 M0010 XAD-2 Resin Tube	3	6/25/20		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.
Q-1954 VEN CB Outlet R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *Q-1953*)	3	6/25/20		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.
Q-1955 VEN CB Outlet R3 M0010 Impingers 1,2 & 3 Condensate	3	6/25/20		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.
Q-1956 VEN CB Outlet R3 M0010 Impinger Glassware MeOH Rinse (Combine with *Q-1953*)	3	6/25/20		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.
Q-1957 VEN CB Outlet R3 M0010 Breakthrough XAD-2 Resin Tube	3	6/25/20		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.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 0.6/CT 0.6°C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	HAND DELIVERED, NO CUSTODY SEALS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Patti Bales	Ramboll	6/25/20 21:00
Accepted By:	Wm. C. Anderson	Eurofins T.A	6/25/20 21:00
Relinquished By:	Wm. C. Anderson	Eurofins T.A.	6/26/20 14:50
Accepted By:	Ryan Johnson	ETA-KNX	6.26.20 14:50
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Loc: 140
19507

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

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓		✓	☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: 0.0	✓ ✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓ ✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓ ✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓		✓	☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?	✓			☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓ ✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓ ✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			//	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			//	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

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

Project #: 140043 26 PM Instructions:

Sample Receiving Associate: Date: 6-28-20

QA026R32.doc, 062719

7/13/2020

eurofins | Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 140-19508-1
Client Project/Site: VEN Stack - HFPO-DA

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

Attn: Michael Aucoin

Authorized for release by:
7/13/2020 2:03:42 PM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

Table of Contents

Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5	Isotope dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.

Glossary

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

Job ID: 140-19508-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-19508-1

Sample Receipt

The samples were received on June 26, 2020 at 2:50 PM in good condition and properly preserved and on ice. The temperature of the cooler at receipt was 0.5º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

LCMS

Method 537 (modified): Results for samples T-1805,1806 M0010 VEN STACK R1 FH (140-19508-1), T-1812,1813 M0010 VEN STACK R2 FH (140-19508-5) and T-1819,1820 M0010 VEN STACK R3 FH (140-19508-9) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The method blanks for preparation batch 140-40652 and 140-40721 and analytical batch 140-40787 contained HFPO-DA above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

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): T-1805,1806 M0010 VEN STACK R1 FH (140-19508-1), T-1812,1813 M0010 VEN STACK R2 FH (140-19508-5) and T-1819,1820 M0010 VEN STACK R3 FH (140-19508-9). 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): Results for samples T-1807,1808,1810 M0010 VEN STACK R1 BH (140-19508-2), T-1814,1815,1817 M0010 VEN STACK R2 BH (140-19508-6) and T-1821,1822,1824 M0010 VEN STACK R3 BH (140-19508-10) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): Results for sample T-1811 M0010 VEN STACK R1 BREAKTHROUGH XAD-2 RESIN TUBE (140-19508-4) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

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

Organic Prep

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 Stack - HFPO-DA

Job ID: 140-19508-1

Client Sample ID: T-1805,1806 M0010 VEN STACK R1 FH — Lab Sample ID: 140-19508-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	18.1	E B	0.0500	0.0250	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	61.0	B	0.500	0.250	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1807,1808,1810 M0010 VEN STACK R1 BH — Lab Sample ID: 140-19508-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	6.01		0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: T-1809 M0010 VEN STACK R1 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-19508-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.106		0.0753	0.0753	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1811 M0010 VEN STACK R1 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-19508-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.256	B	0.00640	0.00640	ug/Sample	4		537 (modified)	Total/NA

Client Sample ID: T-1812,1813 M0010 VEN STACK R2 FH — Lab Sample ID: 140-19508-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	12.5	E B	0.0500	0.0250	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	23.3	B	0.500	0.250	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1814,1815,1817 M0010 VEN STACK R2 BH — Lab Sample ID: 140-19508-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	5.18		0.0800	0.0800	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: T-1816 M0010 VEN STACK R2 IMPINGERS 1,2&3 COND — Lab Sample ID: 140-19508-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.252		0.0893	0.0893	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1818 M0010 VEN STACK R2 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-19508-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0293	B	0.00160	0.00160	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1819,1820 M0010 VEN STACK R3 FH — Lab Sample ID: 140-19508-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	12.9	E B	0.0500	0.0250	ug/Sample	50		537 (modified)	Total/NA
HFPO-DA - DL	25.5	B	0.500	0.250	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1821,1822,1824 M0010 VEN STACK R3 BH — Lab Sample ID: 140-19508-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	6.73		0.0800	0.0800	ug/Sample	50		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 Stack - HFPO-DA

Job ID: 140-19508-1

Client Sample ID: T-1823 M0010 VEN STACK R3 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19508-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.307		0.0823	0.0823	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1825 M0010 VEN STACK R3 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19508-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0209	B	0.00160	0.00160	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: T-1805,1806 M0010 VEN STACK R1 FH

Lab Sample ID: 140-19508-1

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	18.1	E B	0.0500	0.0250	ug/Sample		06/30/20 07:30	07/05/20 19:13	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*243*	**5*	*25 - 150*	*06/30/20 07:30*	*07/05/20 19:13*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	61.0	B	0.500	0.250	ug/Sample		06/30/20 07:30	07/06/20 18:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*89*		*25 - 150*	*06/30/20 07:30*	*07/06/20 18:25*	*1*

Client Sample ID: T-1807,1808,1810 M0010 VEN STACK R1 BH

Lab Sample ID: 140-19508-2

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	6.01		0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 21:41	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*123*		*25 - 150*	*06/29/20 12:07*	*07/07/20 21:41*	*50*

Client Sample ID: T-1809 M0010 VEN STACK R1 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19508-3

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.106		0.0753	0.0753	ug/Sample		06/30/20 13:59	07/01/20 18:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*95*		*25 - 150*	*06/30/20 13:59*	*07/01/20 18:38*	*1*

Client Sample ID: T-1811 M0010 VEN STACK R1 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19508-4

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.256	B	0.00640	0.00640	ug/Sample		06/29/20 12:07	07/10/20 19:47	4

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*83*		*25 - 150*	*06/29/20 12:07*	*07/10/20 19:47*	*4*

Client Sample ID: T-1812,1813 M0010 VEN STACK R2 FH

Lab Sample ID: 140-19508-5

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	12.5	E B	0.0500	0.0250	ug/Sample		06/30/20 07:30	07/05/20 19:22	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*147*		*25 - 150*	*06/30/20 07:30*	*07/05/20 19:22*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	23.3	B	0.500	0.250	ug/Sample		06/30/20 07:30	07/06/20 18:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*88*		*25 - 150*	*06/30/20 07:30*	*07/06/20 18:34*	*1*

Client Sample ID: T-1814,1815,1817 M0010 VEN STACK R2 BH

Lab Sample ID: 140-19508-6

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	5.18		0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 22:16	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*25 - 150*	*06/29/20 12:07*	*07/07/20 22:16*	*50*

Client Sample ID: T-1816 M0010 VEN STACK R2 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19508-7

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.252		0.0893	0.0893	ug/Sample		06/30/20 13:59	07/01/20 18:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*96*		*25 - 150*	*06/30/20 13:59*	*07/01/20 18:47*	*1*

Client Sample ID: T-1818 M0010 VEN STACK R2 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19508-8

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0293	B	0.00160	0.00160	ug/Sample		06/29/20 12:07	07/10/20 19:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*71*		*25 - 150*	*06/29/20 12:07*	*07/10/20 19:56*	*1*

Client Sample ID: T-1819,1820 M0010 VEN STACK R3 FH

Lab Sample ID: 140-19508-9

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	12.9	E B	0.0500	0.0250	ug/Sample		06/30/20 07:30	07/05/20 19:31	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*154*	*5*	*25 - 150*	*06/30/20 07:30*	*07/05/20 19:31*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	25.5	B	0.500	0.250	ug/Sample		06/30/20 07:30	07/06/20 18:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*89*		*25 - 150*	*06/30/20 07:30*	*07/06/20 18:43*	*1*

Client Sample ID: T-1821,1822,1824 M0010 VEN STACK R3 BH

Lab Sample ID: 140-19508-10

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	6.73		0.0800	0.0800	ug/Sample		06/29/20 12:07	07/07/20 22:52	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*113*		*25 - 150*	*06/29/20 12:07*	*07/07/20 22:52*	*50*

Client Sample ID: T-1823 M0010 VEN STACK R3 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19508-11

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.307		0.0823	0.0823	ug/Sample		06/30/20 13:59	07/01/20 18:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*96*		*25 - 150*	*06/30/20 13:59*	*07/01/20 18:56*	*1*

Client Sample ID: T-1825 M0010 VEN STACK R3 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19508-12

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0209	B	0.00160	0.00160	ug/Sample		06/29/20 12:07	07/10/20 20:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*65*		*25 - 150*	*06/29/20 12:07*	*07/10/20 20:05*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00100	0.000500	ug/Sample
HFPO-DA	0.00160	0.00160	ug/Sample
HFPO-DA	0.000700	0.000700	ug/Sample

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

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)
140-19508-1	T-1805,1806 M0010 VEN STAC	243 *5
140-19508-1 - DL	T-1805,1806 M0010 VEN STACK R1 FH	89
140-19508-2	T-1807,1808,1810 M0010 VEN STACK R1 BH	123
140-19508-3	T-1809 M0010 VEN STACK R1 IMPINGERS 1,2&3 COND	95
140-19508-4	T-1811 M0010 VEN STACK R1 BREAKTHROUGH XAD-2 RESI TUBE	83
140-19508-5	T-1812,1813 M0010 VEN STACK R2 FH	147
140-19508-5 - DL	T-1812,1813 M0010 VEN STACK R2 FH	88
140-19508-6	T-1814,1815,1817 M0010 VEN STACK R2 BH	98
140-19508-7	T-1816 M0010 VEN STACK R2 IMPINGERS 1,2&3 COND	96
140-19508-8	T-1818 M0010 VEN STACK R2 BREAKTHROUGH XAD-2 RESI TUBE	71
140-19508-9	T-1819,1820 M0010 VEN STACK R3 FH	154 *5
140-19508-9 - DL	T-1819,1820 M0010 VEN STACK R3 FH	89
140-19508-10	T-1821,1822,1824 M0010 VEN STACK R3 BH	113
140-19508-11	T-1823 M0010 VEN STACK R3 IMPINGERS 1,2&3 COND	96
140-19508-12	T-1825 M0010 VEN STACK R3 BREAKTHROUGH XAD-2 RESI TUBE	65
LCS 140-40642/2-B	Lab Control Sample	76
LCS 140-40652/2-B	Lab Control Sample	77
LCS 140-40695/2-B	Lab Control Sample	98
LCSD 140-40642/3-B	Lab Control Sample Dup	77
LCSD 140-40652/3-B	Lab Control Sample Dup	76
LCSD 140-40695/3-B	Lab Control Sample Dup	95
MB 140-40642/14-B	Method Blank	75
MB 140-40642/1-B	Method Blank	70
MB 140-40652/14-B	Method Blank	73
MB 140-40652/1-B	Method Blank	77
MB 140-40695/1-B	Method Blank	93

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-40642/14-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40642

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00160	ug/Sample		06/29/20 12:07	07/07/20 15:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*75*		*25 - 150*	*06/29/20 12:07*	*07/07/20 15:26*	*1*

Lab Sample ID: MB 140-40642/1-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40642

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.002645		0.00160	0.00160	ug/Sample		06/29/20 12:07	07/07/20 15:17	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*70*		*25 - 150*	*06/29/20 12:07*	*07/07/20 15:17*	*1*

Lab Sample ID: LCS 140-40642/2-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40642

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.01939	B	ug/Sample		97	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*76*		*25 - 150*

Lab Sample ID: LCSD 140-40642/3-B
Matrix: Air
Analysis Batch: 40859

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40642

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02011	B	ug/Sample		101	60 - 140	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*77*		*25 - 150*

Lab Sample ID: MB 140-40652/14-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40652

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001330		0.00100	0.000500	ug/Sample		06/30/20 07:30	07/05/20 17:27	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*73*		*25 - 150*	*06/30/20 07:30*	*07/05/20 17:27*	*1*

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

Lab Sample ID: MB 140-40652/1-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40652

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001856		0.00100	0.000500	ug/Sample		06/30/20 07:30	07/05/20 17:19	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*77*		*25 - 150*	*06/30/20 07:30*	*07/05/20 17:19*	*1*

Lab Sample ID: LCS 140-40652/2-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40652

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.02110		ug/Sample		106	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*77*		*25 - 150*

Lab Sample ID: LCSD 140-40652/3-B
Matrix: Air
Analysis Batch: 40787

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40652

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0200	0.02297		ug/Sample		115	60 - 140	8	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*76*		*25 - 150*

Lab Sample ID: MB 140-40695/1-B
Matrix: Air
Analysis Batch: 40723

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40695

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000700	0.000700	ug/Sample		06/30/20 13:59	07/01/20 16:51	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*93*		*25 - 150*	*06/30/20 13:59*	*07/01/20 16:51*	*1*

Lab Sample ID: LCS 140-40695/2-B
Matrix: Air
Analysis Batch: 40723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40695

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0100	0.008513		ug/Sample		85	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*98*		*25 - 150*

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

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

Lab Sample ID: LCSD 140-40695/3-B
Matrix: Air
Analysis Batch: 40723

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40695

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.009504		ug/Sample		95	60 - 140	11	30

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

LCMS

Prep Batch: 40642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-2	T-1807,1808,1810 M0010 VEN STACK R1 BH	Total/NA	Air	None	
140-19508-4	T-1811 M0010 VEN STACK R1 BREAKTHROUG	Total/NA	Air	None	
140-19508-6	T-1814,1815,1817 M0010 VEN STACK R2 BH	Total/NA	Air	None	
140-19508-8	T-1818 M0010 VEN STACK R2 BREAKTHROUG	Total/NA	Air	None	
140-19508-10	T-1821,1822,1824 M0010 VEN STACK R3 BH	Total/NA	Air	None	
140-19508-12	T-1825 M0010 VEN STACK R3 BREAKTHROUG	Total/NA	Air	None	
MB 140-40642/14-B	Method Blank	Total/NA	Air	None	
MB 140-40642/1-B	Method Blank	Total/NA	Air	None	
LCS 140-40642/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-40642/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 40652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-1 - DL	T-1805,1806 M0010 VEN STACK R1 FH	Total/NA	Air	None	
140-19508-1	T-1805,1806 M0010 VEN STACK R1 FH	Total/NA	Air	None	
140-19508-5	T-1812,1813 M0010 VEN STACK R2 FH	Total/NA	Air	None	
140-19508-5 - DL	T-1812,1813 M0010 VEN STACK R2 FH	Total/NA	Air	None	
140-19508-9 - DL	T-1819,1820 M0010 VEN STACK R3 FH	Total/NA	Air	None	
140-19508-9	T-1819,1820 M0010 VEN STACK R3 FH	Total/NA	Air	None	
MB 140-40652/14-B	Method Blank	Total/NA	Air	None	
MB 140-40652/1-B	Method Blank	Total/NA	Air	None	
LCS 140-40652/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-40652/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 40695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-3	T-1809 M0010 VEN STACK R1 IMPINGERS 1,2	Total/NA	Air	None	
140-19508-7	T-1816 M0010 VEN STACK R2 IMPINGERS 1,2	Total/NA	Air	None	
140-19508-11	T-1823 M0010 VEN STACK R3 IMPINGERS 1,2	Total/NA	Air	None	
MB 140-40695/1-B	Method Blank	Total/NA	Air	None	
LCS 140-40695/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-40695/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 40700

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-3	T-1809 M0010 VEN STACK R1 IMPINGERS 1,2	Total/NA	Air	Split	40695
140-19508-7	T-1816 M0010 VEN STACK R2 IMPINGERS 1,2	Total/NA	Air	Split	40695
140-19508-11	T-1823 M0010 VEN STACK R3 IMPINGERS 1,2	Total/NA	Air	Split	40695
MB 140-40695/1-B	Method Blank	Total/NA	Air	Split	40695
LCS 140-40695/2-B	Lab Control Sample	Total/NA	Air	Split	40695
LCSD 140-40695/3-B	Lab Control Sample Dup	Total/NA	Air	Split	40695

Cleanup Batch: 40721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-1 - DL	T-1805,1806 M0010 VEN STACK R1 FH	Total/NA	Air	Split	40652
140-19508-1	T-1805,1806 M0010 VEN STACK R1 FH	Total/NA	Air	Split	40652
140-19508-5 - DL	T-1812,1813 M0010 VEN STACK R2 FH	Total/NA	Air	Split	40652
140-19508-5	T-1812,1813 M0010 VEN STACK R2 FH	Total/NA	Air	Split	40652
140-19508-9 - DL	T-1819,1820 M0010 VEN STACK R3 FH	Total/NA	Air	Split	40652
140-19508-9	T-1819,1820 M0010 VEN STACK R3 FH	Total/NA	Air	Split	40652
MB 140-40652/14-B	Method Blank	Total/NA	Air	Split	40652

LCMS (Continued)

Cleanup Batch: 40721 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-40652/1-B	Method Blank	Total/NA	Air	Split	40652
LCS 140-40652/2-B	Lab Control Sample	Total/NA	Air	Split	40652
LCSD 140-40652/3-B	Lab Control Sample Dup	Total/NA	Air	Split	40652

Analysis Batch: 40723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-3	T-1809 M0010 VEN STACK R1 IMPINGERS 1,2	Total/NA	Air	537 (modified)	40700
140-19508-7	T-1816 M0010 VEN STACK R2 IMPINGERS 1,2	Total/NA	Air	537 (modified)	40700
140-19508-11	T-1823 M0010 VEN STACK R3 IMPINGERS 1,2	Total/NA	Air	537 (modified)	40700
MB 140-40695/1-B	Method Blank	Total/NA	Air	537 (modified)	40700
LCS 140-40695/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	40700
LCSD 140-40695/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	40700

Cleanup Batch: 40734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-2	T-1807,1808,1810 M0010 VEN STACK R1 BH	Total/NA	Air	Split	40642
140-19508-4	T-1811 M0010 VEN STACK R1 BREAKTHROUG	Total/NA	Air	Split	40642
140-19508-6	T-1814,1815,1817 M0010 VEN STACK R2 BH	Total/NA	Air	Split	40642
140-19508-8	T-1818 M0010 VEN STACK R2 BREAKTHROUG	Total/NA	Air	Split	40642
140-19508-10	T-1821,1822,1824 M0010 VEN STACK R3 BH	Total/NA	Air	Split	40642
140-19508-12	T-1825 M0010 VEN STACK R3 BREAKTHROUG	Total/NA	Air	Split	40642
MB 140-40642/14-B	Method Blank	Total/NA	Air	Split	40642
MB 140-40642/1-B	Method Blank	Total/NA	Air	Split	40642
LCS 140-40642/2-B	Lab Control Sample	Total/NA	Air	Split	40642
LCSD 140-40642/3-B	Lab Control Sample Dup	Total/NA	Air	Split	40642

Analysis Batch: 40787

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-1	T-1805,1806 M0010 VEN STACK R1 FH	Total/NA	Air	537 (modified)	40721
140-19508-5	T-1812,1813 M0010 VEN STACK R2 FH	Total/NA	Air	537 (modified)	40721
140-19508-9	T-1819,1820 M0010 VEN STACK R3 FH	Total/NA	Air	537 (modified)	40721
MB 140-40652/14-B	Method Blank	Total/NA	Air	537 (modified)	40721
MB 140-40652/1-B	Method Blank	Total/NA	Air	537 (modified)	40721
LCS 140-40652/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	40721
LCSD 140-40652/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	40721

Analysis Batch: 40811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-1 - DL	T-1805,1806 M0010 VEN STACK R1 FH	Total/NA	Air	537 (modified)	40818
140-19508-5 - DL	T-1812,1813 M0010 VEN STACK R2 FH	Total/NA	Air	537 (modified)	40818
140-19508-9 - DL	T-1819,1820 M0010 VEN STACK R3 FH	Total/NA	Air	537 (modified)	40818

Cleanup Batch: 40818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-1 - DL	T-1805,1806 M0010 VEN STACK R1 FH	Total/NA	Air	Dilution	40721
140-19508-5 - DL	T-1812,1813 M0010 VEN STACK R2 FH	Total/NA	Air	Dilution	40721
140-19508-9 - DL	T-1819,1820 M0010 VEN STACK R3 FH	Total/NA	Air	Dilution	40721

Analysis Batch: 40859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-2	T-1807,1808,1810 M0010 VEN STACK R1 BH	Total/NA	Air	537 (modified)	40734

LCMS (Continued)

Analysis Batch: 40859 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-6	T-1814,1815,1817 M0010 VEN STACK R2 BH	Total/NA	Air	537 (modified)	40734
140-19508-10	T-1821,1822,1824 M0010 VEN STACK R3 BH	Total/NA	Air	537 (modified)	40734
MB 140-40642/14-B	Method Blank	Total/NA	Air	537 (modified)	40734
MB 140-40642/1-B	Method Blank	Total/NA	Air	537 (modified)	40734
LCS 140-40642/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	40734
LCSD 140-40642/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	40734

Analysis Batch: 40951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-19508-4	T-1811 M0010 VEN STACK R1 BREAKTHROUG	Total/NA	Air	537 (modified)	40734
140-19508-8	T-1818 M0010 VEN STACK R2 BREAKTHROUG	Total/NA	Air	537 (modified)	40734
140-19508-12	T-1825 M0010 VEN STACK R3 BREAKTHROUG	Total/NA	Air	537 (modified)	40734

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

Client Sample ID: T-1805,1806 M0010 VEN STACK R1 FH

Lab Sample ID: 140-19508-1

Date Collected: 06/25/20 00:00
Date Received: 06/26/20 14:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	110 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			55 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40787	07/05/20 19:13	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	110 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		55 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		20 uL	10000 uL	40818	07/06/20 13:27	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40811	07/06/20 18:25	CLJ	TAL KNX
	Instrument ID: LCA									

Client Sample ID: T-1807,1808,1810 M0010 VEN STACK R1 BH

Lab Sample ID: 140-19508-2

Date Collected: 06/25/20 00:00
Date Received: 06/26/20 14:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 21:41	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: T-1809 M0010 VEN STACK R1 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19508-3

Date Collected: 06/25/20 00:00
Date Received: 06/26/20 14:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.0093 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 18:38	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: T-1811 M0010 VEN STACK R1 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19508-4

Date Collected: 06/25/20 00:00
Date Received: 06/26/20 14:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		4			40951	07/10/20 19:47	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

Client Sample ID: T-1812,1813 M0010 VEN STACK R2 FH

Lab Sample ID: 140-19508-5

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	90 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			45 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40787	07/05/20 19:22	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	90 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		45 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		20 uL	10000 uL	40818	07/06/20 13:27	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40811	07/06/20 18:34	CLJ	TAL KNX
	Instrument ID: LCA									

Client Sample ID: T-1814,1815,1817 M0010 VEN STACK R2 BH

Lab Sample ID: 140-19508-6

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 22:16	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: T-1816 M0010 VEN STACK R2 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19508-7

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00784 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 18:47	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: T-1818 M0010 VEN STACK R2 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19508-8

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40951	07/10/20 19:56	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

Client Sample ID: T-1819,1820 M0010 VEN STACK R3 FH

Lab Sample ID: 140-19508-9

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	108 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			54 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40787	07/05/20 19:31	JRC	TAL KNX
	Instrument ID: LCA									
Total/NA	Prep	None	DL		1 Sample	108 mL	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split	DL		54 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Cleanup	Dilution	DL		20 uL	10000 uL	40818	07/06/20 13:27	JRC	TAL KNX
Total/NA	Analysis	537 (modified)	DL	1			40811	07/06/20 18:43	CLJ	TAL KNX
	Instrument ID: LCA									

Client Sample ID: T-1821,1822,1824 M0010 VEN STACK R3 BH

Lab Sample ID: 140-19508-10

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			40859	07/07/20 22:52	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: T-1823 M0010 VEN STACK R3 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-19508-11

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00851 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 18:56	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: T-1825 M0010 VEN STACK R3 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-19508-12

Date Collected: 06/25/20 00:00
Matrix: Air
Date Received: 06/26/20 14:50

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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40951	07/10/20 20:05	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-40642/14-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:26	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-40642/1-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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:17	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-40652/14-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	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:27	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-40652/1-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	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:19	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-40695/1-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	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 16:51	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-40642/2-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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:35	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-40652/2-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	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:36	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-40695/2-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	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 17:10	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-40642/3-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	40642	06/29/20 12:07	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	40734	07/01/20 15:40	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40859	07/07/20 15:43	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-40652/3-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	40652	06/30/20 07:30	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	40721	07/01/20 10:14	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40787	07/05/20 17:45	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

Client Sample ID: Lab Control Sample Dup

Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCSD 140-40695/3-B

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	40695	06/30/20 13:59	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	40700	06/30/20 15:36	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			40723	07/01/20 17:19	JRC	TAL KNX
	Instrument ID: LCA									

Laboratory References:

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

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
Job ID: 140-19508-1
Project/Site: VEN Stack - HFPO-DA

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
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	07-31-20
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	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
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	08-31-20

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: VEN Stack - HFPO-DA

Job ID: 140-19508-1

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 XAD	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 Stack - HFPO-DA

Job ID: 140-19508-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-19508-1	T-1805,1806 M0010 VEN STACK R1 FH	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-2	T-1807,1808,1810 M0010 VEN STACK R1 BH	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-3	T-1809 M0010 VEN STACK R1 IMPINGERS 1,2&3 COND	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-4	T-1811 M0010 VEN STACK R1 BREAKTHROUGH XAD-2 RESIN TUBE	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-5	T-1812,1813 M0010 VEN STACK R2 FH	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-6	T-1814,1815,1817 M0010 VEN STACK R2 BH	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-7	T-1816 M0010 VEN STACK R2 IMPINGERS 1,2&3 COND	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-8	T-1818 M0010 VEN STACK R2 BREAKTHROUGH XAD-2 RESIN TUBE	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-9	T-1819,1820 M0010 VEN STACK R3 FH	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-10	T-1821,1822,1824 M0010 VEN STACK R3 BH	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-11	T-1823 M0010 VEN STACK R3 IMPINGERS 1,2&3 COND	Air	06/25/20 00:00	06/26/20 14:50	
140-19508-12	T-1825 M0010 VEN STACK R3 BREAKTHROUGH XAD-2 RESIN TUBE	Air	06/25/20 00:00	06/26/20 14:50	

Request for Analysis/Chain-of-Custody – RFA/COC #004
The Chemours Company – Fayetteville NC Facility
HFPO-DA Testing on VEN Stack

eurofins | 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

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

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	TestAmerica Laboratories, Inc. 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	Hand Deliver

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

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
HFPO-DA (CAS No. 13252-13-6)	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
T-1805 VEN Stack R1 M0010 Filter (Combine with *T-1806*)	1	6/25/20		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.
T-1806 VEN Stack R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *T-1805*)	1	6/25/20		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxid Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction. 140-19508 Chain of Custody
T-1807 VEN Stack R1 M0010 XAD-2 Resin Tube	1	6/25/20		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.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
T-1808 VEN Stack R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *T-1807*)	1	6/25/20		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.
T-1809 VEN Stack R1 M0010 Impingers 1,2 & 3 Condensate	1	6/25/20		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.
T-1810 VEN Stack R1 M0010 Impinger Glassware MeOH Rinse (Combine with *T-1807*)	1	6/25/20		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.
T-1811 VEN Stack R1 M0010 Breakthrough XAD-2 Resin Tube	1	6/25/20		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.
T-1812 VEN Stack R2 M0010 Filter (Combine with *T-1813*)	2	6/25/20		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.
T-1813 VEN Stack R2 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *T-1812*)	2	6/25/20		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.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
T-1814 VEN Stack R2 M0010 XAD-2 Resin Tube	2	6/25/20		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.
T-1815 VEN Stack R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *T-1814*)	2	6/25/20		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.
T-1816 VEN Stack R2 M0010 Impingers 1,2 & 3 Condensate	2	6/25/20		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.
T-1817 VEN Stack R2 M0010 Impinger Glassware MeOH Rinse (Combine with *T-1814*)	2	6/25/20		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.
T-1818 VEN Stack R2 M0010 Breakthrough XAD-2 Resin Tube	2	6/25/20		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.
T-1819 VEN Stack R3 M0010 Filter (Combine with *T-1820*)	3	6/25/20		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.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
T-1820 VEN Stack R3 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *T-1819*)	3	6/25/20		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.
T-1821 VEN Stack R3 M0010 XAD-2 Resin Tube	3	6/25/20		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.
T-1822 VEN Stack R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *T-1821*)	3	6/25/20		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.
T-1823 VEN Stack R3 M0010 Impingers 1,2 & 3 Condensate	3	6/25/20		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.
T-1824 VEN Stack R3 M0010 Impinger Glassware MeOH Rinse (Combine with *T-1821*)	3	6/25/20		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.
T-1825 VEN Stack R3 M0010 Breakthrough XAD-2 Resin Tube	3	6/25/20		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.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 0.5 / CT 0.5'c
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	HAND DELIVERED, NO CUSTODY SEALS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Patrick Murray	Ramboll	6/25/20 21:00
Accepted By:	Wm. C. Anderson	Eurofins T.A.	6/25/20 21:00
Relinquished By:	Wm. C. Anderson	Eurofins T.A.	6/26/20 14:50
Accepted By:	Ryan Lanman	ETA KNX	6.26.20 14:50
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Loc: 140
19508

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

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓		✓	☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: 0.0	✓ ✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓ ✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓ ✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?	✓		✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓ ✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓ ✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

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

Project #: 140004326 PM Instructions:

Sample Receiving Associate: Date: 6-28-20

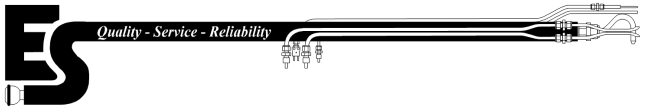
QA026R32.doc, 062719

7/13/2020

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.

					INITIAL	FINAL	AVG (P_{bar})
DATE:	1/13/2020	METER SERIAL #:	MB 2	BAROMETRIC PRESSURE (in Hg):	30.3	30.29	30.295
METER PART #:		CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH ($in\ H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	$DH_@$
11	1	0.306	23	341.926	347.963	6.037	69.1	69	70	69	70	69.5	15.00	0.44	6.1030	6.0470	0.991			1.54
	2	0.306																		
	3	0.306																		
																AVG =	0.991	-0.12	0.56	
16	1	0.4268	22	335.279	340.931	5.652	69.8	73	73	68	70	71	10.00	0.83	5.7030	5.6191	0.985			1.49
	2	0.4268																		
	3	0.4268																		
																AVG =	0.985	-0.68	-0.56	
18	1	0.4961	21.5	347.963	354.445	6.482	69.3	70	72	70	70	70.5	10.00	1.2	6.5525	6.5346	0.997			1.60
	2	0.4961																		
	3	0.4961																		
																AVG =	0.997	0.53	1.21	
26	1	0.7131	19	315.203	324.428	9.225	70.3	64	69	63	66	65.5	10.00	2.5	9.4438	9.3840	0.994			1.63
	2	0.7131																		
	3	0.7131																		
																AVG =	0.994	0.16	0.05	
31	1	0.8358	17.5	324.428	335.279	10.851	70	67	73	65	68	68.25	10.00	3.5	11.0772	11.0018	0.993			1.66
	2	0.8358																		
	3	0.8358																		
																AVG =	0.993	0.12	-0.05	

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

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.992

AVERAGE $DH_@$ = 1.58

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

= Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

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

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

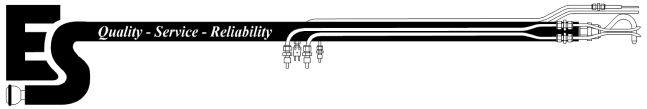
(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

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

RAMBOLL

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



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

					INITIAL	FINAL	AVG (P_{bar})
DATE:	4/1/2020	METER SERIAL #:	MB5	BAROMETRIC PRESSURE (in Hg):	29.83	29.83	29.83
METER PART #:		CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	FINAL	DGM OUTLET INITIAL	FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	$DH_@$
11	1	0.306	23	18.604	24.691	6.087	67.3	66	68	66	67	66.75	15.00	0.49	6.0916	5.9644	0.979			1.74
	2	0.306																		
	3	0.306																		
																	AVG =	0.979	-1.43	-1.04
16	1	0.4268	21.5	66.222	71.863	5.641	69	73	73	71	71	72	10.00	1	5.5965	5.5370	0.989			1.82
	2	0.4268																		
	3	0.4268																		
																	AVG =	0.989	-0.40	1.05
18	1	0.4961	21	30.186	36.697	6.511	68.1	69	70	68	69	69	10.00	1.4	6.5027	6.4416	0.991			1.90
	2	0.4961																		
	3	0.4961																		
																	AVG =	0.991	-0.27	0.12
26	1	0.7131	18	46.170	55.444	9.274	68.5	72	73	69	70	71	10.00	2.8	9.2590	9.2557	1.000			1.84
	2	0.7131																		
	3	0.7131																		
																	AVG =	1.000	0.64	0.91
31	1	0.8358	17	55.444	66.222	10.778	68.8	73	75	70	71	72.25	10.00	3.8	10.7616	10.8452	1.008			1.81
	2	0.8358																		
	3	0.8358																		
																	AVG =	1.008	1.46	1.73

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 = 0.993

AVERAGE $DH_@$ = 1.82

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

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

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

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

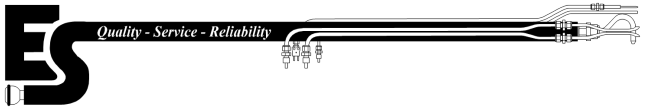
(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

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

RAMBOLL

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: ###### | METER SERIAL #: MB 11 | BAROMETRIC PRESSURE (in Hg): INITIAL 30.21, FINAL 30.21, AVG (P_{bar}) 30.21

METER PART #: | CRITICAL ORIFICE SET SERIAL #: 1393

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	$DH_@$
11	1	0.306	24.5	307.808	313.867	6.059	71	78	79	77	77	77.75	15.00	0.46	6.0146	6.0193	1.001			1.60
	2	0.306																		
	3	0.306																		
																AVG =	1.001	0.13	1.08	
16	1	0.4268	23	313.867	319.563	5.696	71.6	79	80	78	78	78.75	10.00	0.9	5.6498	5.5938	0.990			1.60
	2	0.4268																		
	3	0.4268																		
																AVG =	0.990	-0.94	-1.07	
18	1	0.4961	22	319.563	326.062	6.499	71.6	79	80	78	78	78.75	10.00	1.2	6.4510	6.5021	1.008			1.58
	2	0.4961																		
	3	0.4961																		
																AVG =	1.008	0.85	1.80	
26	1	0.7131	19.5	326.666	336.103	9.437	71.7	80	82	79	79	80	10.00	2.6	9.3773	9.3453	0.997			1.66
	2	0.7131																		
	3	0.7131																		
																AVG =	0.997	-0.29	-0.54	
31	1	0.8358	18	336.361	347.356	10.995	72.2	81	84	80	80	81.25	10.00	3.6	10.9266	10.9482	1.002			1.68
	2	0.8358																		
	3	0.8358																		
																AVG =	1.002	0.25	0.54	

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 = 0.999

AVERAGE $DH_@$ = 1.63

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

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

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

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

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

= DGM calibration factor

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

Initial Oven Box Thermocouple Calibration

ID Number	Ice Bath			Ambient			Hot Water Bath			Technician	Date Performed
	Reference Temperature (^{o}R)	Thermocouple Temperature (^{o}R)	Deviation*	Reference Temperature (^{o}R)	Thermocouple Temperature (^{o}R)	Deviation*	Reference Temperature (^{o}R)	Thermocouple Temperature (^{o}R)	Deviation*		
OB-1	491.67	492.67	0.2%	524.67	523.67	-0.2%	671.67	673.67	0.3%	JLS	01/17/20
OB-2	491.67	492.67	0.2%	524.67	524.67	0.0%	671.67	669.67	-0.3%	JLS	01/17/20
OB-3	491.67	492.67	0.2%	524.67	524.67	0.0%	671.67	669.67	-0.3%	JLS	01/17/20
OB-4	491.67	493.67	0.4%	524.67	524.67	0.0%	671.67	670.67	-0.1%	JLS	01/17/20
OB-A	491.67	492.67	0.2%	524.67	526.67	0.4%	671.67	673.67	0.3%	JLS	01/17/20
OB-B	491.67	492.67	0.2%	524.67	526.67	0.4%	671.67	672.67	0.1%	JLS	01/17/20
OB-5	491.67	494.67	0.6%	524.67	523.67	-0.2%	671.67	669.67	-0.3%	JLS	01/17/20
OB-C	491.67	492.67	0.2%	524.67	525	0.0%	671.67	673.67	0.3%	JLS	01/17/20
OB-6	491.67	493.67	0.4%	524.67	525	0.0%	671.67	669.67	-0.3%	JLS	01/17/20
OB-7	491.67	494.67	0.6%	524.67	525	0.0%	671.67	671.67	0.0%	JLS	01/17/20
OB-E	491.67	494	0.4%	524.67	528	0.6%	671.67	668.67	-0.4%	JLS	01/17/20
OB-10	491.67	493.67	0.4%	524.67	525.67	0.2%	671.67	671.67	0.0%	JLS	01/17/20
OB-11	491.67	493.67	0.4%	524.67	525.67	0.2%	671.67	671.67	0.0%	JLS	01/17/20

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

*Acceptable Deviation: 1.5%

Initial Impinger Outlet Thermocouple Calibration

ID Number	Ice Bath			Ambient			Hot Water Bath			Technician	Date Performed
	Reference Temperature (^{o}Rk)	Thermocouple Temperature (^{o}Rk)	Deviation*	Reference Temperature (^{o}Rk)	Thermocouple Temperature (^{o}Rk)	Deviation*	Reference Temperature (^{o}Rk)	Thermocouple Temperature (^{o}Rk)	Deviation*		
IO-1	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-2	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-3	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-4	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	669.67	-0.3%	JLS	01/30/20
IO-5	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-6	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-7	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-8	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	669.67	-0.3%	JLS	01/30/20
IO-9	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-10	491.67	492.67	0.2%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-11	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	672.67	0.1%	JLS	01/30/20
IO-12	491.67	492.67	0.2%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-13	NA			NA			NA			JLS	01/30/20
IO-14	491.67	494.67	0.6%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-15	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	670.67	-0.1%	JLS	01/30/20
IO-16	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-17	NA			NA			NA			JLS	01/30/20
IO-18	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	669.67	-0.3%	JLS	01/30/20
IO-19	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-19	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20

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

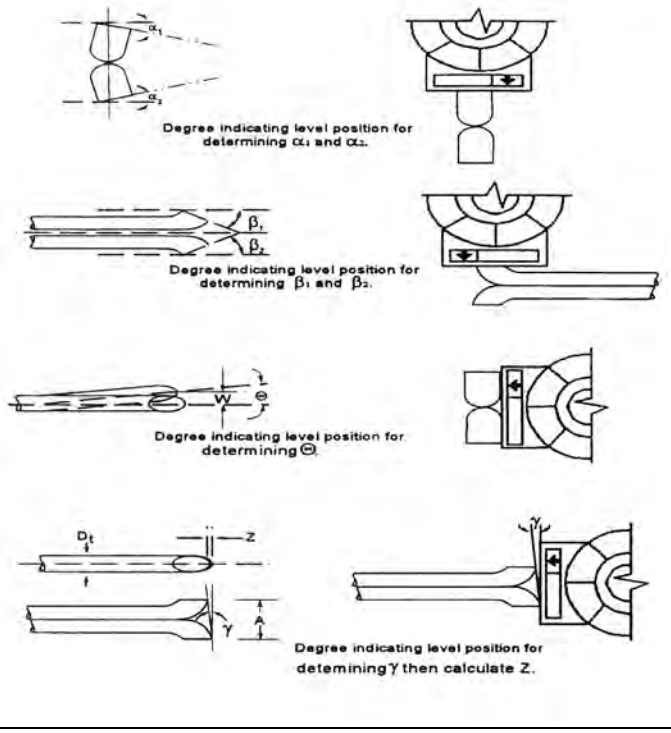
Initial Sample Probe Calibration Form

Probe ID: P4-2/TC-5D | Date: 06/16/20 | Technician: P. Grady

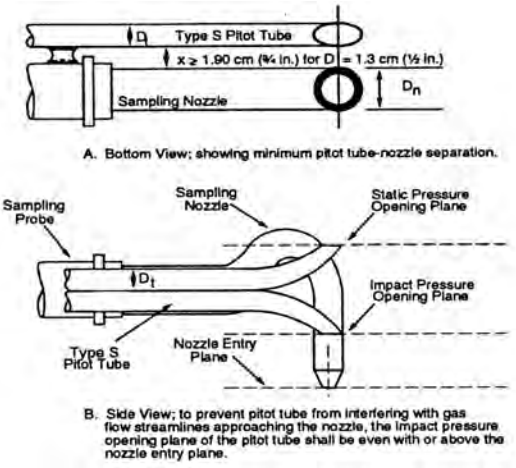
"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 ($-10^o = \alpha_1 = +10^o$)	2
α_2 ($-10^o = \alpha_2 = +10^o$)	1
$ß_1$ ($-5^o = ß_1 = +5^o$)	1
$ß_2$ ($-5^o = ß_2 = +5^o$)	1
γ	1
Θ	0
z = A Tan γ (< 0.125")	0.011
W = A Tan Θ (< 0.03125")	0.0000
D_t (3/16 = D_t = 3/8")	0.251
A	0.650
A/2D_t (1.05 = P_A/D_t = 1.5)	1.295

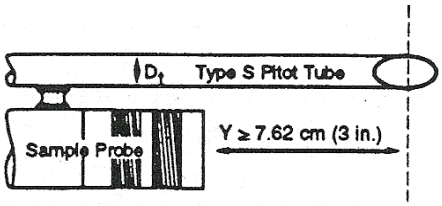
Source: Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III, Stationary Source-Specific Methods. EPA/600/R-94/038c, September 30, 1994



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



Does X Exceed 0.75 inches?	Yes
Does Y Exceed 3 inches?	NA



Thermocouple Calibration

	Ice Bath ^oR			Ambient ^oR			Boiling Water ^oR		
	1	2	3	1	2	3	1	2	3
Reference Temp	492.3	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 herby assigned a pitot tube calibration factor C_p of 0.84.

Certified By: P. Grady Date: 06/16/20

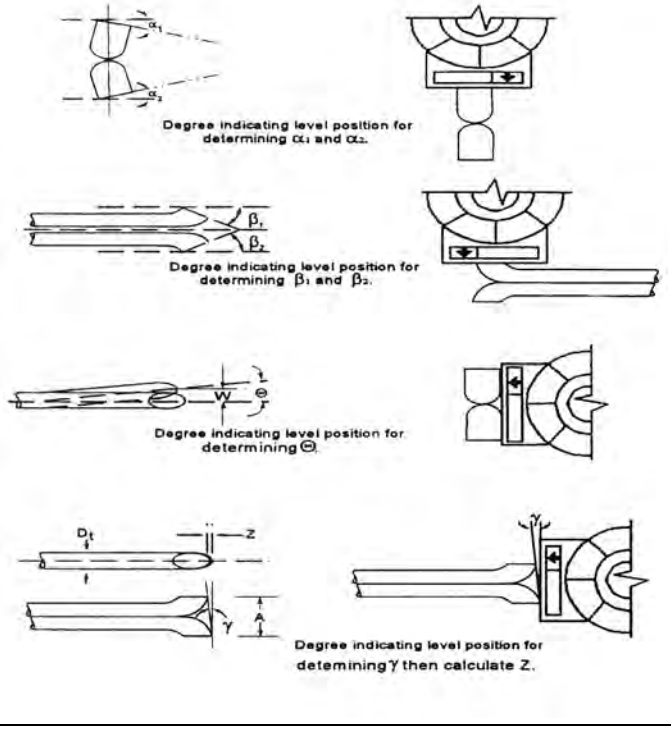
Initial Sample Probe Calibration Form

Probe ID: P4-1/TC-7C | Date: 06/16/20 | Technician: P. Grady

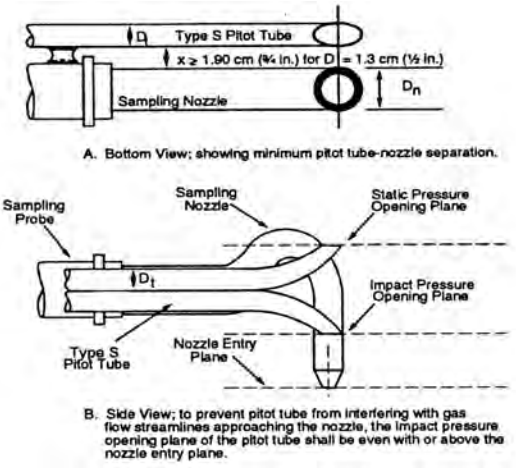
"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 ($-10^o = \alpha_1 = +10^o$)	1
α_2 ($-10^o = \alpha_2 = +10^o$)	0
$ß_1$ ($-5^o = ß_1 = +5^o$)	1
$ß_2$ ($-5^o = ß_2 = +5^o$)	1
γ	1
Θ	0
z = A Tan γ (< 0.125")	0.011
W = A Tan Θ (< 0.03125")	0.0000
D_t (3/16 = D_t = 3/8")	0.252
A	0.655
A/2D_t (1.05 = P_A/D_t = 1.5)	1.300

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

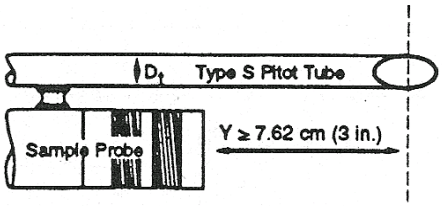


Verification of "S" Type Pitot, Thermocouple and Nozzle Placement



Does X Exceed 0.75 inches? Yes

Does Y Exceed 3 inches? NA



Thermocouple Calibration

	Ice Bath ^oR			Ambient ^oR			Boiling Water ^oR		
	1	2	3	1	2	3	1	2	3
Reference Temp	492.3	492.3	492.3	533.4	533.4	533.4	671.5	671.5	671.5
Thermocouple Temp	492.8	492.7	492.8	532.9	532.8	532.9	671.6	671.8	671.8
Difference (%)	0.1	0.1	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0

Temperature values must be within 1.5% of reference temperature

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

Certified By: P. Grady Date: 06/16/20

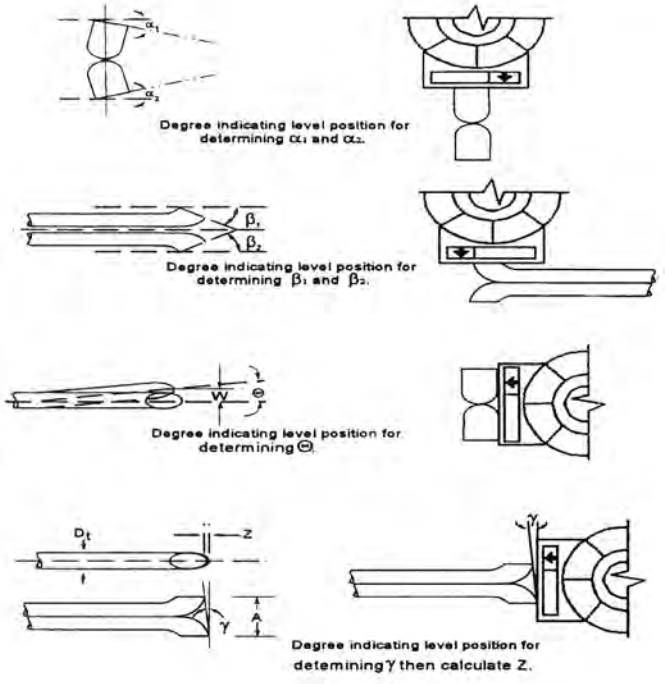
Initial Sample Probe Calibration Form

Probe ID: P4-3/TC-7D | Date: 06/16/20 | Technician: P. Grady

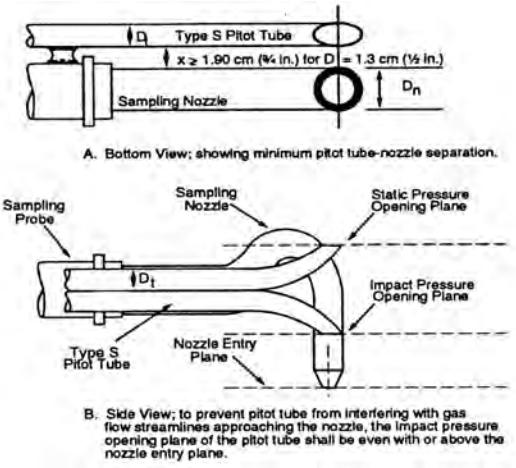
"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 ($-10^o = \alpha_1 = +10^o$)	1
α_2 ($-10^o = \alpha_2 = +10^o$)	0
$ß_1$ ($-5^o = ß_1 = +5^o$)	1
$ß_2$ ($-5^o = ß_2 = +5^o$)	1
γ	1
Θ	1
z = A Tan γ (< 0.125")	0.011
W = A Tan Θ (< 0.03125")	0.0110
D_t (3/16 = D_t = 3/8")	0.251
A	0.628
A/2D_t (1.05 = P_A/D_t = 1.5)	1.251

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

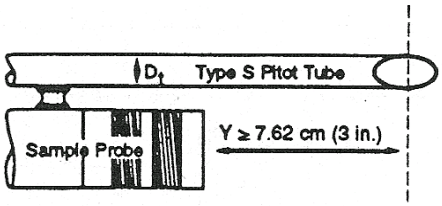


Verification of "S" Type Pitot, Thermocouple and Nozzle Placement



Does X Exceed 0.75 inches? Yes

Does Y Exceed 3 inches? NA



Thermocouple Calibration

	Ice Bath °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 herby 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:	06/30/20	METER BOX #:	2	BAROMETRIC PRESSURE (in Hg):	INITIAL 29.97	FINAL 29.97	AVG (P_{bar}) 29.97
TECHNICIAN:	A.Anderson	CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH ($in H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	$DH_@$
	1																		
	2																		
	3																		
																AVG =			
18	1	0.4961	21	877.265	883.745	6.480	74	69	71	69	70	69.75	10.00	1.2	6.4896	6.4359	0.992	1.93	1.63
	2	0.4961	21	883.745	890.430	6.685	74	71	72	70	70	70.75	10.00	1.2	6.6823	6.4359	0.963	-1.01	1.63
	3	0.4961	21	890.430	897.115	6.685	74	72	72	70	71	71.25	10.00	1.2	6.6760	6.4359	0.964	-0.92	1.63
																AVG =	0.973		
	1																		
	2																		
	3																		
																AVG =			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.973

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

PERCENT DIFFERENCE = -1.9

POST TEST DRY GAS METER CALIBRATION

DATE:	06/12/20	METER BOX #:	5	BAROMETRIC PRESSURE (in Hg):	INITIAL 29.97	FINAL 29.97	AVG (P_{bar}) 29.97
TECHNICIAN:	A. Anderson	CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	TEMPERATURES °F DGM INLET INITIAL	TEMPERATURES °F DGM INLET FINAL	TEMPERATURES °F DGM OUTLET INITIAL	TEMPERATURES °F DGM OUTLET FINAL	TEMPERATURES °F DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	$DH_@$
	1																		
	2																		
	3																		
																AVG =			
18	1	0.4961	21	321.955	328.473	6.518	72	71	72	69	70	70.5	10.00	1.3	6.5201	6.4480	0.989	0.29	1.76
	2	0.4961	21	328.473	335.038	6.565	72	72	72	70	70	71	10.00	1.3	6.5609	6.4480	0.983	-0.33	1.76
	3	0.4961	21	335.038	341.579	6.541	72	72	72	70	70	71	10.00	1.3	6.5369	6.4480	0.986	0.04	1.76
																AVG =	0.986		
	1																		
	2																		
	3																		
																AVG =			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.986

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 0.993

PERCENT DIFFERENCE = -0.7

POST TEST DRY GAS METER CALIBRATION

				INITIAL	FINAL	AVG (P_{bar})
DATE:	06/30/20	METER BOX #:	11	BAROMETRIC PRESSURE (in Hg):	29.96	29.96	29.96
TECHNICIAN:	A.Anderson	CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	TEMPERATURES °F DGM INLET INITIAL	TEMPERATURES °F DGM INLET FINAL	TEMPERATURES °F DGM OUTLET INITIAL	TEMPERATURES °F DGM OUTLET FINAL	TEMPERATURES °F DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	$DH_@$
	1																		
	2																		
	3																		
																AVG =			
18	1	0.4961	22	882.172	888.820	6.648	72	76	77	76	76	76.25	10.00	1.2	6.5749	6.4459	0.980	-0.16	1.61
	2	0.4961	22	888.820	895.463	6.643	72	77	77	76	77	76.75	10.00	1.2	6.5639	6.4459	0.982	0.01	1.61
	3	0.4961	22	895.463	902.096	6.633	72	77	77	76	77	76.75	10.00	1.2	6.5540	6.4459	0.984	0.16	1.61
																AVG =	0.982		
	1																		
	2																		
	3																		
																AVG =			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y =	0.982
PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y =	0.999
PERCENT DIFFERENCE =	-1.7

Post-Test Sample Probe Calibration Form

Probe ID P4-1

Visual Inspection

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

Post-Test Thermocouple Calibration

Reference Temperature ^{O}F	Thermocouple Temperature ^{O}F	Difference ^{O}F
77	78	1

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

Accepatable Deviation +/- 2 ^{O}F

x	Acceptable
	Unacceptable

Date 06/30/20 Technician AA

Post-Test Sample Probe Calibration Form

Probe ID P4-2

Visual Inspection

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

Post-Test Thermocouple Calibration

Reference Temperature ^{O}F	Thermocouple Temperature ^{O}F	Difference ^{O}F
77	77	0

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

Accepatable Deviation +/- 2 ^{O}F

x Acceptable

Unacceptable

Date 06/30/20

Technician AA

Post-Test Sample Probe Calibration Form

Probe ID P4-3/TC-7D

Visual Inspection

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

Post-Test Thermocouple Calibration

Reference Temperature ^{O}F	Thermocouple Temperature ^{O}F	Difference ^{O}F
77	78	1

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

Accepatable Deviation +/- 2 ^{O}F

x	Acceptable
	Unacceptable

Date 06/30/20 Technician AA