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SOURCE EMISSIONS TESTING OF THE POLYMER PROCESS AID CARBON BED

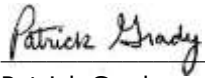
SOURCE EMISSIONS TESTING OF THE POLYMER PROCESS AID CARBON BED

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Prepared by **Patrick Grady, Project Associate**
Checked by **David Ostaszewski, PE, Senior Managing Engineer**

Ramboll
7600 Morgan Road
Liverpool, NY 13090
USA

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

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



Patrick Grady
Project Associate
Ramboll

Ramboll
7600 Morgan Road
Liverpool, NY 13090
USA

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



David Ostaszewski, PE
Senior Managing Engineer
Ramboll

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1. INTRODUCTION AND BACKGROUND

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

1.1 Testing Objective

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

The source emissions test program was performed on March 11, 2021. Messrs. Patrick Grady, Jeff Sheldon, Brian Goodhile, Antonio Anderson and Ms. Samantha Waters of Ramboll conducted the emissions testing. Ms. Christel Compton and Mr. Edward Vega coordinated process operations with the emissions testing. There were no representatives from any of the regulatory agencies present to observe the field test program.

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

1.2 Emissions Testing Program Participants

Facility

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

Source Testing Firm

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

Sample Analysis Laboratory

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

2. PROCESS DESCRIPTION

This section provides a description of the PPA process.

2.1 Process Description

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

2.2 Operating Conditions During Testing

Source emissions testing was performed during normal operations of the PPA process. Facility personnel monitored and recorded process operations during the testing. These 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 PPA carbon bed 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 34-inch inside diameter (ID) carbon bed inlet duct are located approximately 60 inches (1.8 diameters) downstream of a bend and approximately 42 inches (1.2 diameters) upstream of the carbon bed. Test ports in the 30-inch ID carbon bed outlet stack are located approximately 12 feet (4.8 diameters) downstream of the nearest disturbance and approximately 30 feet (12 diameters) upstream from the stack exit. A total of 12 traverse points were sampled on each diameter during each test run for a total of 24 traverse points. Traverse points were located in accordance with USEPA RM 1. Schematics of the sample locations along with traverse point locations are provided in Appendix B.

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. Pollutant mass emission rates (lb/hr) were calculated using these volumetric flow rate data and pollutant concentrations.

4.4 Oxygen and Carbon Dioxide Concentrations

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

4.5 Moisture Content

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

4.6 HFPO-DA Emissions

HFPO-DA emissions were evaluated in accordance with a modified USEPA Method 0010. The sample train consisted of a glass nozzle attached directly to a heated borosilicate glass-lined probe. The probe was connected directly to a heated borosilicate glass filter holder containing a solvent-extracted glass fiber filter. In order to minimize possible thermal degradation of the HFPO-DA, the probe and particulate filter were heated to just above stack temperature to minimize water vapor condensation before the filter. The filter holder exit was connected to a water-cooled coil condenser followed by a water-cooled sorbent module containing approximately 40 grams of XAD-2 resin. The XAD-2 inlet temperature was monitored to ensure that the module is maintained at a temperature below 20°C.

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

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

4.6.1 HFPO-DA Sample Train and Equipment Preparation

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

1. Wash all glassware, brushes, and ancillary tools with low residue soap and hot water.
2. Rinse all glassware, brushes, and ancillary tools three (3) times with D.I. H₂O.
3. Bake glassware (with the exception of probe liners) at 450°C for approximately 2 hours, (XAD-2 resin tube glassware will be cleaned by Eurofins/TestAmerica by this same procedure).
4. Solvent rinse three (3) times all glassware, brushes, and ancillary tools with the following sequence of solvents: acetone, methylene chloride, hexane, and methanol.
5. Clean glassware and tools will be sealed in plastic bags or aluminum foil for transport to the sampling site.
6. Squirt bottles will be new dedicated bottles of known history and dedicated to the D.I. Water and methanol/ammonium hydroxide (MeOH/ 5% NH₄OH) solvent contents. Squirt bottles will be labelled with the solvent content it contains.

4.6.2 HFPO-DA Sample Train Recovery

Following completion of each test run, the sample probe, nozzle and front-half of the filter holder were brushed and rinsed three times each with the MeOH/ 5% NH₄OH solution (Container #1). The glass fiber filter was removed from its housing and transferred to a polyethylene bottle (Container #2). Any particulate matter and filter fibers which adhered to the filter holder and gasket were also placed in Container #2. The XAD-2 resin trap was sealed, labelled and placed in an iced sample cooler. The back-half of the filter holder, coil condenser condensate trap and connecting glassware were rinsed with the same MeOH/ 5% NH₄OH solution and placed in Container #3.

The volume of water collected in the second and third impingers was measured for moisture determinations and then placed in Container #4. Impingers #2 and #3 were then rinsed with the MeOH/ 5% NH₄OH solution and placed in Container #5. The second (breakthrough) XAD-2 resin trap was sealed, labelled and placed in an iced sample cooler. The second condensate trap was rinsed with the MeOH/ 5% NH₄OH solution and placed in Container #5. The contents of the fifth impinger were placed in its original container and weighed for moisture determinations.

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

5. EMISSIONS TEST RESULTS

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

5.1 Emission Test Results

Table 1 presents a detailed summary of the HFPO-DA test results. HFPO-DA concentrations at the carbon bed inlet ranged from $9.94\text{E-}02$ mg/dscm to $1.19\text{E-}01$ mg/dscm and averaged $1.10\text{E-}01$ mg/dscm. Corresponding mass emissions of HFPO-DA ranged from $5.07\text{E-}03$ lb/hr to $6.08\text{E-}03$ lb/hr and averaged $5.67\text{E-}03$ lb/hr.

Concentrations of HFPO-DA at the carbon bed outlet ranged from $2.02\text{E-}03$ mg/dscm to $4.13\text{E-}02$ mg/dscm and averaged $3.06\text{E-}03$ mg/dscm. Mass emission rates of HFPO-DA from the carbon bed outlet ranged from $8.10\text{E-}05$ lb/hr to $1.68\text{E-}04$ lb/hr and averaged $1.23\text{E-}04$ lb/hr. The resulting HFPO-DA removal efficiency of the PPA carbon bed ranged from 97 percent to 98 percent and averaged 98 percent.

Note that for test Run 3 HFPO-DA emissions were calculated without including the analytical data for the breakthrough XAD module. It is believed there was contamination on the breakthrough XAD module from Run 3 at the carbon bed outlet. A review of the analytical reports confirms that, with the exception of Run 3 at the carbon bed outlet, the highest concentration of HFPO-DA is captured in the front-half of the sampling train and then descending through the back-half and condenser portion (impingers) of the sample train. All test runs were conducted on the same day and a review of production data indicates there was no change or upset in the process during the testing. The carbon bed currently only controls PPA indoor air fugitives and there were no leaks during the testing. Therefore, it is believed that the contamination of the breakthrough XAD module did not come from the carbon bed outlet.

5.2 Discussion and Conclusion

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

6. QUALITY ASSURANCE/QUALITY CONTROL

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

6.1 Equipment Calibration

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

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

6.2 Equipment Leak Checks

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

6.3 Reagent Blanks and Field Blanks

A field blank for the Modified USEPA RM 0010 sample train was collected as part of the test program. The blank train was assembled and set-up near one of the carbon bed outlet test locations and as close to the outlet sample train as possible. The blank train remained in place for the duration of the sampling run. The blank train was heated to the same temperature as used

for the outlet sampling train, and the impinger portion of the train was iced down and chilled water circulated through the coil condenser as described in SW-846 Method 0010. The blank train was recovered in the same location, and by the same procedures as the actual sampling trains.

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

Reagent blanks of the diH₂O used in the sample trains and MeOH/5% NH₄OH solution used for sample recovery were also submitted to the laboratory for analysis along with the field samples. Note that the field blank train and proof blank was 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
Polymer Process Aid Carbon Bed
Fayetteville, North Carolina

Run Identification	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average
Source ID:	<u>Carbon Bed Inlet</u>				<u>Carbon Bed Outlet</u>			
Run Date	11Mar21	11Mar21	11Mar21		11Mar21	11Mar21	11Mar21	
Start/Stop Time	0919-1107	1137-1322	1343-1527		0919-1107	1137-1322	1343-1527	
<u>Exhaust Gas Conditions</u>								
Temperature (deg. F)	73	76	79	76	82	83	84	83
Moisture (volume %)	1.1	1.2	1.1	1.1	1.2	1.1	1.1	1.1
Oxygen (dry volume %)	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9
Carbon Dioxide (dry volume %)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<u>Volumetric Flow Rate</u>								
acfm	13,690	14,098	13,827	13,872	10,936	10,921	10,908	10,922
dscfm	13,622	13,914	13,599	13,712	10,780	10,745	10,714	10,747
<u>HFPO - Dimer Acid</u>								
mg/dscm	1.19E-01	1.13E-01	9.94E-02	1.10E-01	4.17E-03	2.98E-03	2.02E-03	3.06E-03
lb/hr	6.08E-03	5.88E-03	5.07E-03	5.67E-03	1.68E-04	1.20E-04	8.10E-05	1.23E-04
<u>Carbon Bed Removal Efficiency</u>								
percent	97	98	98	98				

APPENDIX A PROCESS OPERATING DATA

APPENDIX B SCHEMATICS OF THE TEST LOCATIONS

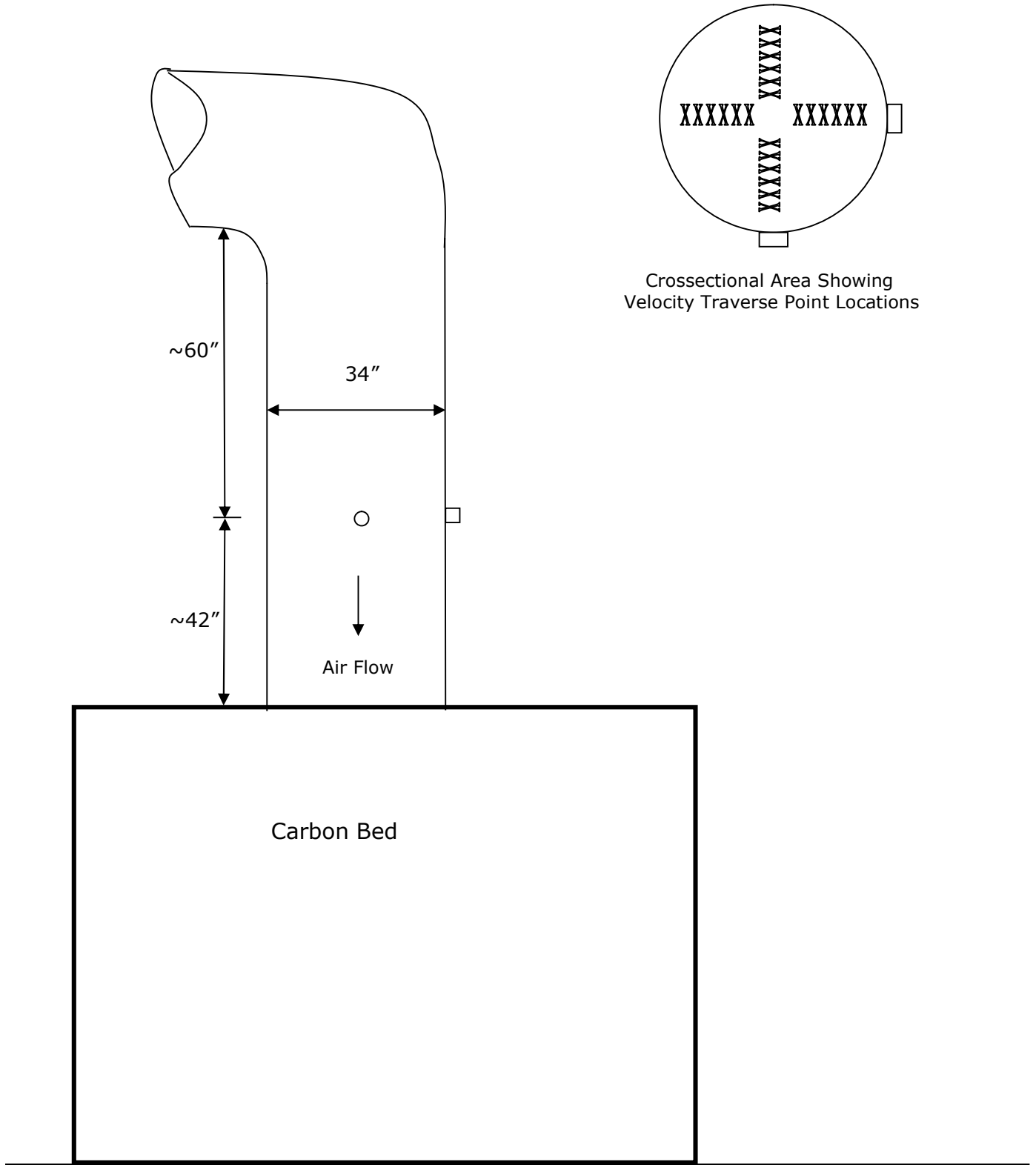


Figure 1
Carbon Bed Inlet Sampling Location
Polymer Process Aid
The Chemours Company
Fayetteville, North Carolina

Sample Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: PPA Carbon Bed inlet

Stack Diameter: 34 inches

Sampling Locations: 1.8 diameters downstream
1.2 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	2.3
3	11.8	4.0
4	17.7	6.0
5	25.0	8.5
6	35.6	12.1
7	64.4	21.9
8	75.0	25.5
9	82.3	28.0
10	88.2	30.0
11	93.3	31.7
12	97.9	34.0

*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.

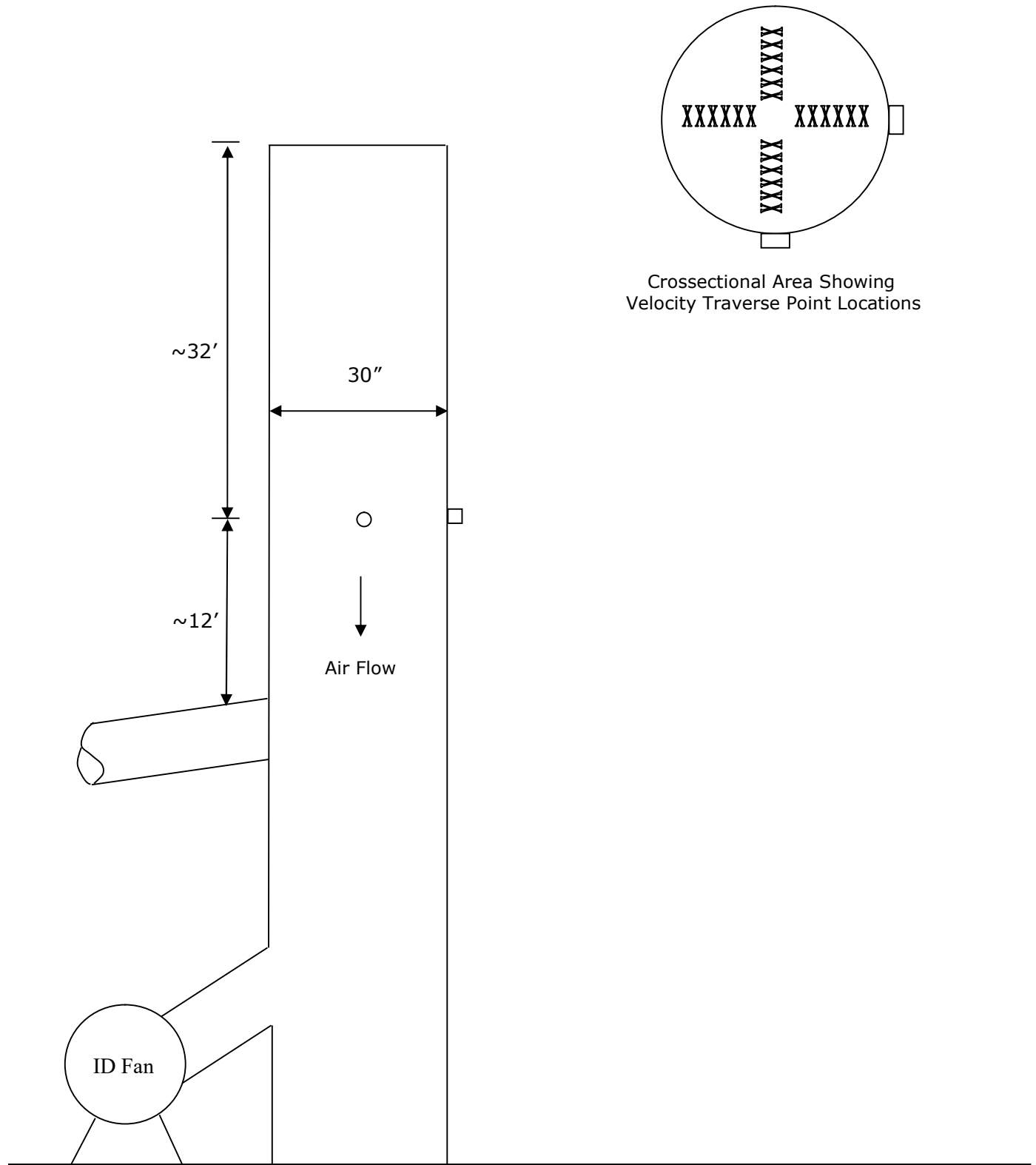


Figure 2
 Carbon Bed Outlet Sampling Location
 Polymer Process Aid
 The Chemours Company
 Fayetteville, North Carolina

Sample Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: PPA Carbon Bed Outlet

Stack Diameter: 30 inches

Sampling Locations: 4.8 diameters downstream
12 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	2.0
3	11.8	3.5
4	17.7	5.3
5	25.0	7.5
6	35.6	10.7
7	64.4	19.3
8	75.0	22.5
9	82.3	24.7
10	88.2	26.5
11	93.3	28.0
12	97.9	29.0

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

APPENDIX C

FIELD DATA AND CALCULATIONS

PPA Carbon Bed Inlet Field Test Data

Test Data Summary and Calculations
The Chemours Company - Fayetteville Works
Polymer Process Aid Carbon Bed Inlet
Fayetteville, North Carolina

Parameter	Run 1	Run 2	Run 3
Run Date	3/11/21	3/11/21	3/11/21
Start/Stop Time	0919-1107	1137-1322	1343-1527
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	0.983	0.983	0.983
Meter Delta H, inches of H2O	1.71	1.71	1.71
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	30.48	30.48	30.48
Static Pressure, inches of H2O	-1.6	-1.6	-1.7
Dry Gas Meter Sample Volume, (VM)ft ³			
Initial	595.047	660.775	727.995
Final	660.632	727.731	793.633
Total Volume	65.585	66.956	65.638
Ave. Stack Temperature, Ts(F)	72.5	76.3	78.8
Ave. Meter Temperature, Tm(F)	73.7	79.9	83.1
Ave. Run Delta H, inches of H2O	1.41	1.48	1.42
Ave. Square Root of Delta P	0.6449	0.6616	0.6474
Moisture Data			
Volume of water collected, mls	3	4	2.8
Silica Gel, grams	12.6	13.2	12
Total Collected, mls	15.6	17.2	14.8
ORSAT Data			
%O2	20.90	20.90	20.90
%CO2	0.0	0.0	0.0
%CO			

Calculations

Vw(std), scf =	0.734	0.810	0.697
Vm(std), dscf =	65.197	65.808	64.125
Bws =	0.011	0.012	0.011
Md =	28.84	28.84	28.84
Ms =	28.72	28.70	28.72
Vs, ft/sec =	36.2	37.3	36.6
Qs, acfm =	13,690	14,098	13,827
Qs(std), dscfm =	13,622	13,914	13,599
Isokinetic Sampling Rate, %	97.6	96.5	96.2

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
Polymer Process Aid 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	0.21993	1.19E-01	8.68E-03	6.08E-03	0.21008	1.13E-01	8.21E-03	5.88E-03	0.18058	9.94E-02	7.24E-03	5.07E-03	0.20	1.10E-01	8.04E-03	5.67E-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 = ma/1000/((453.59 a/lb)/(dscf)) x dscfm x 60 min/hr

Example Calculations

The Chemours Company - Fayetteville Works
Polymer Process Aid Carbon Bed Inlet
Fayetteville, North Carolina

Note: Values are shown for example purposes only.

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

Initial gas meter volume: 595.047
Final gas meter volume: 660.632
Difference: 65.585

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

= 17.647 x V_{m, a} x Gamma*[Pbar+(DeltaH/13.6)]/Tm(R)
= 17.647 x 0.000 x 0.983 x (30.48 + [(1.710 /13.6) / 534]
= 65.197

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

impinger catch (mls): 3
silica gel (g) 12.6
total: 15.6

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

= (0.04707) x (V_{I,c})
= 0.04707 x 15.6
= 0.734

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

= V_{w,std}/(V_{w,std}+V_{m,std})
= 0.73 / (0.73 + 65.197)
= 0.011

P_s = Stack gas static pressure (in. Hg)

= St/13.6
= -1.60 / 13.6
= -0.118

P_a = Absolute stack gas pressure (in. Hg)

= P_s+P_{bar}
= -0.118 + 30.48
= 30.36

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

= 1-B_{w,o}
= 1 - 0.011
= 0.989

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

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

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

= (M_d) x (M_{F,D}) + (0.18) x (B_{w,o}*100)
= 28.84 x 0.989 + 0.18 x 1.11372
= 28.72

Example Calculations

The Chemours Company - Fayetteville Works
Polymer Process Aid Carbon Bed Inlet
Fayetteville, North Carolina

Note: Values are shown for example purposes only.

Vs,avg = Average stack gas velocity (fps)

$$\begin{aligned} &= K_p \times (C_p) \times (\text{sqrt}(\Delta P)) \times \text{sqrt}((T_s + 460^\circ R)/M_w \times P_a) \\ &= 85.48 \times 0.84 \times 0.64 \times \text{sqrt}(0.61) \\ &= 36.2 \end{aligned}$$

A Cross sectional areas of stack (sq. ft)

$$\begin{aligned} &= \pi/4 \times d^2 \\ &= 3.14159/4 \times 2.83^2 \\ &= 6.30 \end{aligned}$$

Qa Volumetric flow rate at actual conditions (acfm)

$$\begin{aligned} &= (60 \text{ sec/min}) \times (A) \times (V_s, \text{ avg}) \\ &= 60 \times 6.3050 \times 36.19 \\ &= 13,689 \end{aligned}$$

Qstd Volumetric flow rate at standard conditions (scfm)

$$\begin{aligned} &= Q_a \times (528/T_{s, \text{ avg}} + 460) \times P_a/29.92 \\ &= 13,689 \times (528 / 533) \times 1.015 \\ &= 13,774 \end{aligned}$$

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

$$\begin{aligned} &= Q_{\text{std}} \times (1 - B_{\text{wo}}) \\ &= 13,774 \times 0.9889 \\ &= 13,621 \end{aligned}$$

mg/dscm HFPO-DA concentration

$$\begin{aligned} &= (\text{mg/dscf}) \times 35.314 \text{ cu. ft./cu. meter} \\ &= (0.220 / 65.20) \times 35.314 \\ &= 1.19\text{E-}01 \end{aligned}$$

lb/hr HFPO-DA Mass Emission Rate

$$\begin{aligned} &= \text{mg}/1000 / [(453.59 \text{ g/lb}) / (\text{dscf})] \times \text{dscfm} \times 60 \text{ min/hr} \\ &= 0.220 / 1,000 / [(453.59) / 65.20] \times 13,622 \times 60 \\ &= 6.08\text{E-}03 \end{aligned}$$

Sample Train Recovery Data Sheet

Client The Chemours Co. **Location** Fayetteville, NC **Source** PPA Inlet **Method** Modified 0010 **Date** 3/11/2021

Run # 1

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>493.2</u>	<u>492.6</u>	<u>0.6</u>	Filter #1 _____
Impinger #2	<u>686.8</u>	<u>687.2</u>	<u>-0.4</u>	Filter #2 _____
Impinger #3	<u>787.4</u>	<u>787.8</u>	<u>-0.4</u>	Filter #3 _____
Impinger #4	<u>791.8</u>	<u>790.4</u>	<u>1.4</u>	
Impinger #5	<u>517.6</u>	<u>515.8</u>	<u>1.8</u>	
Impinger #6	<u>866.6</u>	<u>854.0</u>	<u>12.6</u>	
Impinger #7	<u> </u>	<u> </u>	<u>0.0</u>	Run Start Time <u>919</u>
Impinger #8	<u> </u>	<u> </u>	<u>0.0</u>	Run End Time <u>1107</u>
		Total Gain	<u>15.6</u> ml/gm	Recovery Technician <u>PG</u>

Run # 2

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>447.6</u>	<u>447.0</u>	<u>0.6</u>	Filter #1 _____
Impinger #2	<u>781.0</u>	<u>782.4</u>	<u>-1.4</u>	Filter #2 _____
Impinger #3	<u>766.6</u>	<u>766.4</u>	<u>0.2</u>	Filter #3 _____
Impinger #4	<u>772.2</u>	<u>770.4</u>	<u>1.8</u>	
Impinger #5	<u>502.2</u>	<u>499.4</u>	<u>2.8</u>	
Impinger #6	<u>879.0</u>	<u>865.8</u>	<u>13.2</u>	
Impinger #7	<u> </u>	<u> </u>	<u>0.0</u>	Run Start Time <u>1137</u>
Impinger #8	<u> </u>	<u> </u>	<u>0.0</u>	Run End Time <u>1322</u>
		Total Gain	<u>17.2</u> ml/gm	Recovery Technician <u>PG</u>

Run # 3

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>493.4</u>	<u>493.0</u>	<u>0.4</u>	Filter #1 _____
Impinger #2	<u>698.4</u>	<u>698.6</u>	<u>-0.2</u>	Filter #2 _____
Impinger #3	<u>793.6</u>	<u>793.2</u>	<u>0.4</u>	Filter #3 _____
Impinger #4	<u>802.2</u>	<u>801.4</u>	<u>0.8</u>	
Impinger #5	<u>517.2</u>	<u>515.8</u>	<u>1.4</u>	
Impinger #6	<u>843.6</u>	<u>831.6</u>	<u>12.0</u>	
Impinger #7	<u> </u>	<u> </u>	<u>0.0</u>	Run Start Time <u>1343</u>
Impinger #8	<u> </u>	<u> </u>	<u>0.0</u>	Run End Time <u>1527</u>
		Total Gain	<u>14.8</u> ml/gm	Recovery Technician <u>PG</u>



EPA Isokinetic Field Sheet

Methods Performed 0.11 45

Leak Check Rates	
Sample Rate	Pitot
in. cfm	+ -
Initial	10 0.01
Mid	
Mid	
Final	10 0.00

Run Number 04-2
 Pitot Number 84
 Pitot Coefficient TC-5B
 Stack TC I.D. 11
 Oven Box I.D. 1.43
 Impinger Out I.D. ---
 Nozzle Size ---
 XAD Trap I.D. ---

Run Number 2
 Stack Diameter 3.47
 Barometric Pres. 30.48
 Static Pressure -1.4
 Meter Box # 10
 Meter delta H 1.71
 Meter Gamma 0.983

Client The Chemours Company
 Location Fayetteville
 Source PPA Inlet
 Date 3/11/2021
 Operators SRW
 Start Time 11:37
 End Time 13:22

Sample Point	Time (min)	Velocity Head (in. H ₂ O)	Orifice Setting (in. H ₂ O)	Meter Volume (ft ³)	Temperature Readings in Degrees Fahrenheit				Vacuum (in. hg)	Comments/Notes			
					Stack	Probe	Oven Box	Impinger			Aux	Meter Inlet	Meter Outlet
1	4	0.56	1.85	660.775	76	82	85	52	54	77	75	5.5	K-3.3
2	8	0.56	1.85	660.391	76	80	80	55	46	78	75	5.5	
3	12	0.56	1.85	666.15	76	83	84	55	44	79	75	6	
4	16	0.53	1.75	669.42	76	83	83	53	45	80	75	6	
5	20	0.53	1.75	672.52	76	82	83	51	43	81	76	6	
6	24	0.51	1.68	675.84	76	83	83	50	45	82	76	6	
7	28	0.50	1.65	678.72	76	74	80	50	46	83	76	6	
8	32	0.48	1.58	681.85	76	83	83	50	45	83	76	6	
9	36	0.47	1.55	684.71	76	83	82	49	46	84	77	6	
10	40	0.46	1.32	687.74	76	83	84	50	45	84	77	6	
11	44	0.24	0.79	690.61	76	83	84	50	46	84	77	6	
12	48	0.24	0.79	692.74	74	83	83	51	47	83	77	4	
1	52	0.58	1.91	694.953	77	83	83	52	51	81	77	6	Stop: 1225
2	56	0.58	1.91	694.453	77	83	81	51	46	82	77	6	Start: 1234
3	60	0.58	1.91	697.68	77	83	83	49	44	83	78	6	
4	64	0.55	1.82	703.41	77	83	82	50	45	83	78	6	
5	68	0.54	1.78	706.62	77	83	83	49	47	84	78	6	
6	72	0.52	1.72	709.60	77	83	84	49	43	85	78	5.5	
7	76	0.37	1.22	717.81	77	83	83	49	43	85	78	6	
8	80	0.37	1.22	715.72	77	83	85	49	44	85	78	5.5	
9	84	0.32	1.06	718.52	77	83	84	49	45	85	79	5	
10	88	0.25	0.83	721.02	77	83	83	50	45	85	79	5	
11	92	0.25	0.83	724.10	75	83	84	50	48	84	79	4	725.84
12	96	0.25	0.83	725.84	76	83	83	50	45	84	79	4	1322
				727.731									

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

Silica Gel Data (gm)	
#	Initial Final
1	
2	

Moisture Gain	
ml.	gm
Total	

Filter Data	
#	Number Tare
1	
2	
3	

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

RAMBOLL

EPA Isokinetic Field Sheet

Methods Performed OTM-45

Client The Chenoweth Company
 Location Fayetteville
 Source OPPA Inlet
 Date 3/11/2021
 Operators SRW
 Start Time 1343
 End Time 1527

Run Number 3
 Stack Diameter 34"
 Barometric Pres. 30.48
 Static Pressure -1.7
 Meter Box # 10
 Meter delta H 1.71
 Meter Gamma 0.983

Pitot Number 04-2
 Pitot Coefficient .84
 Stack TC I.D. TC-5B
 Oven Box I.D. 11
 Impinger Out I.D. 3
 Nozzle Size .243
 XAD Trap I.D. ---

Leak Check Rates	
Sample Rate	Pitot
In. cfm	+
Initial	✓
Mid	✓
Mid	✓
Final	✓

Sample Point	Sample Time (min)	Velocity Head (in. H ₂ O)	Orifice Setting (in. H ₂ O)	Meter Volume (ft ³)	Temperature Readings in Degrees Fahrenheit				Vacuum (in. hg)	Comments/Notes			
					Stack	Oven Box	Impinger	Aux			Meter Inlet	Meter Outlet	
1	4	0.55	1.82	727.495	77	83	80	52	49	81	79	6	
2	8	0.55	1.82	731.21	79	83	49	52	49	83	79	6	
3	12	0.55	1.82	735.42	79	84	85	52	49	84	79	6.5	
4	16	0.55	1.52	737.3	79	83	83	51	52	85	79	7	
5	20	0.53	1.75	739.95	79	83	83	50	47	86	79	6	
6	24	0.50	1.65	743.34	79	83	83	51	50	86	80	6	
7	28	0.38	1.25	747.01	79	83	84	51	50	86	80	6	
8	32	0.35	1.25	744.35	74	83	83	50	47	85	80	6	1.16
9	36	0.31	1.02	752.61	78	85	85	50	52	87	80	6	
10	40	0.23	0.76	755.31	78	85	85	50	49	86	80	3	
11	44	0.23	0.76	757.62	77	86	86	49	48	86	80	4	
12	48	0.23	0.76	759.12	77	85	85	49	50	86	81	4	
1	52	0.33	1.82	761.461	79	85	85	48	49	84	81	4	Stop 1431
2	56	0.55	1.82	763.62	80	84	86	45	47	85	81	5	Start 1439
3	60	0.55	1.82	766.31	79	85	84	45	46	86	81	6	
4	64	0.54	1.78	769.15	79	84	84	45	47	86	81	6	
5	68	0.54	1.78	772.49	79	85	85	44	45	87	81	5.5	
6	72	0.49	1.67	774.81	79	84	85	45	45	86	81	5	
7	76	0.48	1.58	778.12	80	85	84	43	45	87	81	5.5	
8	80	0.46	1.52	780.82	80	84	84	44	48	88	81	5	
9	84	0.46	1.52	783.71	80	85	85	44	46	88	81	5	
10	88	0.26	0.86	786.91	80	85	86	44	47	88	81	4	
11	92	0.24	0.74	790.42	78	85	86	45	47	87	81	4	
12	96	0.24	0.74	791.24	78	85	86	44	47	86	81	3.5	1527
				793.633									

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

Silica Gel Data (gm)	
#	Initial Final
1	
2	

Moisture Gain	
	ml.
	gm
	Total

Filter Data	
#	Number Tare
1	
2	
3	



PPA Carbon Bed Outlet Field Test Data

Test Data Summary and Calculations
The Chemours Company - Fayetteville Works
Polymer Process Aid Carbon Bed Outlet
Fayetteville, North Carolina

Parameter	Run 1	Run 2	Run 3
Run Date	3/11/21	3/11/21	3/11/21
Start/Stop Time	0919-1107	1137-1322	1343-1527
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	0.968	0.968	0.968
Meter Delta H, inches of H2O	1.56	1.56	1.56
Stack Diameter, inches	30	30	30
Rectangular Width, inches	0	0	0
Rectangular Length, inches	0	0	0
Stack Area, sq.ft.	4.91	4.91	4.91
Barometric Pressure, inches of Hg	30.48	30.48	30.48
Static Pressure, inches of H2O	2	2	2
Dry Gas Meter Sample Volume, (VM)ft ³			
Initial	577.244	645.462	713.984
Final	645.176	713.603	782.432
Total Volume	67.932	68.141	68.448
Ave. Stack Temperature, Ts(F)	81.9	83.2	84.0
Ave. Meter Temperature, Tm(F)	74.4	82.5	86.0
Ave. Run Delta H, inches of H2O	1.32	1.31	1.29
Ave. Square Root of Delta P	0.6587	0.6570	0.6557
Moisture Data			
Volume of water collected, mls	3.6	2.4	4.6
Silica Gel, grams	13	13.4	11.4
Total Collected, mls	16.6	15.8	16.0
ORSAT Data			
%O2	20.90	20.90	20.90
%CO2	0.0	0.0	0.0
%CO			

Calculations

Vw(std), scf =	0.781	0.744	0.753
Vm(std), dscf =	66.398	65.608	65.477
Bws =	0.012	0.011	0.011
Md =	28.84	28.84	28.84
Ms =	28.71	28.71	28.71
Vs, ft/sec =	37.1	37.1	37.0
Qs, acfm =	10,936	10,921	10,908
Qs(std), dscfm =	10,780	10,745	10,714
Isokinetic Sampling Rate, %	97.8	96.9	97.0

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
Polymer Process Aid 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	0.00783	4.17E-03	3.04E-04	1.68E-04	0.00554	2.98E-03	2.17E-04	1.20E-04	0.00374	2.02E-03	1.47E-04	8.10E-05	0.01	3.06E-03	2.23E-04	1.23E-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 = ma/1000/((453.59 a/lb)/(dscf)) x dscfm x 60 min/hr



Example Calculations

The Chemours Company - Fayetteville Works
Polymer Process Aid Carbon Bed Outlet
Fayetteville, North Carolina

Note: Values are shown for example purposes only.

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

Initial gas meter volume: 577.244
Final gas meter volume: 645.176
Difference: 67.932

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

= 17.647 x V_{m, a} x Gamma*[Pbar+(DeltaH/13.6)]/Tm(R)
= 17.647 x 0.000 x 0.968 x (30.48 + [(1.560 /13.6)] / 534
= 66.398

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

impinger catch (mls): 4
silica gel (g) 13.0
total: 16.6

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

= (0.04707) x (V_{l,c})
= 0.04707 x 16.6
= 0.781

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

= V_{w,std}/(V_{w,std}+V_{m,std})
= 0.78 / (0.78 + 66.398)
= 0.012

P_s = Stack gas static pressure (in. Hg)

= St/13.6
= 2.00 / 13.6
= 0.147

P_a = Absolute stack gas pressure (in. Hg)

= P_s+Pbar
= 0.147 + 30.48
= 30.63

M_{FD} = Dry mole fraction of stack gas

= 1-B_{w,o}
= 1 - 0.012
= 0.988

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

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

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

= (M_d) x (M_{FD}) + (0.18) x (B_{w,o}*100)
= 28.84 x 0.988 + 0.18 x 1.1631
= 28.71

Example Calculations

The Chemours Company - Fayetteville Works
Polymer Process Aid Carbon Bed Outlet
Fayetteville, North Carolina

Note: Values are shown for example purposes only.

Vs,avg = Average stack gas velocity (fps)

$$\begin{aligned} &= K_p \times (C_p) \times (\text{sqrt}(\Delta P)) \times \text{sqrt}((T_s + 460^\circ R)/M_w \times P_a) \\ &= 85.48 \times 0.84 \times 0.66 \times \text{sqrt}(0.62) \\ &= 37.1 \end{aligned}$$

A Cross sectional areas of stack (sq. ft)

$$\begin{aligned} &= \pi/4 \times d^2 \\ &= 3.14159/4 \times 2.50^2 \\ &= 4.91 \end{aligned}$$

Qa Volumetric flow rate at actual conditions (acfm)

$$\begin{aligned} &= (60 \text{ sec/min}) \times (A) \times (V_s, \text{ avg}) \\ &= 60 \times 4.9087 \times 37.13 \\ &= 10,935 \end{aligned}$$

Qstd Volumetric flow rate at standard conditions (scfm)

$$\begin{aligned} &= Q_a \times (528/T_{s, \text{ avg}} + 460) \times P_a/29.92 \\ &= 10,935 \times (528 / 542) \times 1.024 \\ &= 10,906 \end{aligned}$$

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

$$\begin{aligned} &= Q_{\text{std}} \times (1 - B_{\text{wo}}) \\ &= 10,906 \times 0.9884 \\ &= 10,779 \end{aligned}$$

mg/dscm HFPO-DA concentration

$$\begin{aligned} &= (\text{mg/dscf}) \times 35.314 \text{ cu. ft./cu. meter} \\ &= (0.008 / 66.40) \times 35.314 \\ &= 4.17\text{E-}03 \end{aligned}$$

lb/hr HFPO-DA Mass Emission Rate

$$\begin{aligned} &= \text{mg}/1000 / [(453.59 \text{ g/lb}) / (\text{dscf})] \times \text{dscfm} \times 60 \text{ min/hr} \\ &= 0.008 / 1,000 / [(453.59) / 66.40] \times 10,780 \times 60 \\ &= 1.68\text{E-}04 \end{aligned}$$

Sample Train Recovery Data Sheet

Client The Chemours Co. Location Fayetteville, NC Source PPA Outlet Method Modified 0010 Date 3/11/2021

Run # 1

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>492.2</u>	<u>491.4</u>	<u>0.8</u>	Filter #1 _____
Impinger #2	<u>803.2</u>	<u>803.0</u>	<u>0.2</u>	Filter #2 _____
Impinger #3	<u>793.4</u>	<u>793.6</u>	<u>-0.2</u>	Filter #3 _____
Impinger #4	<u>758.4</u>	<u>757.2</u>	<u>1.2</u>	
Impinger #5	<u>510.4</u>	<u>508.8</u>	<u>1.6</u>	
Impinger #6	<u>876.8</u>	<u>863.8</u>	<u>13.0</u>	
Impinger #7	<u> </u>	<u> </u>	<u>0.0</u>	Run Start Time <u>919</u>
Impinger #8	<u> </u>	<u> </u>	<u>0.0</u>	Run End Time <u>1107</u>
		Total Gain	<u>16.6</u> ml/gm	Recovery Technician <u>PG</u>

Run # 2

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>467.8</u>	<u>468.0</u>	<u>-0.2</u>	Filter #1 _____
Impinger #2	<u>802.8</u>	<u>803.6</u>	<u>-0.8</u>	Filter #2 _____
Impinger #3	<u>813.0</u>	<u>811.8</u>	<u>1.2</u>	Filter #3 _____
Impinger #4	<u>772.6</u>	<u>771.6</u>	<u>1.0</u>	
Impinger #5	<u>531.2</u>	<u>530.0</u>	<u>1.2</u>	
Impinger #6	<u>892.8</u>	<u>879.4</u>	<u>13.4</u>	
Impinger #7	<u> </u>	<u> </u>	<u>0.0</u>	Run Start Time <u>1137</u>
Impinger #8	<u> </u>	<u> </u>	<u>0.0</u>	Run End Time <u>1322</u>
		Total Gain	<u>15.8</u> ml/gm	Recovery Technician <u>PG</u>

Run # 3

	Final ml or gm	Initial ml or gm	Net Gain	
Impinger #1	<u>493.0</u>	<u>492.0</u>	<u>1.0</u>	Filter #1 _____
Impinger #2	<u>807.0</u>	<u>806.8</u>	<u>0.2</u>	Filter #2 _____
Impinger #3	<u>798.6</u>	<u>797.8</u>	<u>0.8</u>	Filter #3 _____
Impinger #4	<u>757.0</u>	<u>756.0</u>	<u>1.0</u>	
Impinger #5	<u>510.8</u>	<u>509.2</u>	<u>1.6</u>	
Impinger #6	<u>824.0</u>	<u>812.6</u>	<u>11.4</u>	
Impinger #7	<u> </u>	<u> </u>	<u>0.0</u>	Run Start Time <u>1343</u>
Impinger #8	<u> </u>	<u> </u>	<u>0.0</u>	Run End Time <u>1527</u>
		Total Gain	<u>16.0</u> ml/gm	Recovery Technician <u>PG</u>



EPA Isokinetic Field Sheet

Methods Performed MODIFIED P1010

Client THE CHEMURON COMPANY
 Location FAYETTEVILLE, NC
 Source PPA OUTLET
 Date 3/11/21
 Operators 06/53
 Start Time 1137
 End Time 1322

Run Number 2
 Stack Diameter 30"
 Barometric Pres. 30.45
 Static Pressure +2.0
 Meter Box # M1818
 Meter delta H 1.56
 Meter Gamma 0.966

Pitot Number P4-1/TC 70
 Pitot Coefficient 0.84
 Stack TC I.D. TC 70
 Oven Box I.D. 003
 Impinger Out I.D. 1012
 Nozzle Size 0.243
 XAD Trap I.D. _____

Leak Check Rates	
Sample Rate	Pitot
In. cfm	+ -
Initial	✓
Mid	
Mid	
Final	✓

Sample Point	Sample Time (min)	Velocity Head (in. H ₂ O)	Orifice Setting (in. H ₂ O)	Meter Volume (ft ³)	Temperature Readings in Degrees Fahrenheit				Vacuum (in. hg)	Comments/Notes		
					Stack	Oven Box	Impinger	Aux			Meter Inlet	Meter Outlet
1	4	0.34	1.02	645.462	83	90	89	63	79	78	5	
2	8	0.34	1.02	648.2	83	91	89	56	81	77	5	
3	12	0.38	1.14	650.9	83	89	90	50	83	77	5	
4	16	0.45	1.35	653.5	83	90	91	52	84	78	6	
5	20	0.45	1.35	656.4	83	88	89	49	85	78	6	
6	24	0.47	1.41	658.9	83	88	91	50	86	78	6	
7	28	0.50	1.50	662.3	83	89	92	50	87	79	6	
8	32	.47	1.41	664.1	83	90	92	51	87	79	7	
9	36	.49	1.47	668.30	83	89	92	53	88	79	7	
10	40	.49	1.47	671.30	83	90	91	54	87	80	7	
11	44	.49	1.47	—	84	90	92	55	87	80	7	
12	48	.47	1.41	677.00	84	90	92	55	87	80	7	1.225
				680.								
1	52	.17	.54	679.998	80	90	90	58	83	80	4	679.997
2	56	.30	.90	682.1	83	91	91	55	84	80	5	1.224
3	60	.40	1.20	684.50	84	92	91	55	84	80	5	
4	64	.40	1.20	686.50	84	91	92	53	85	80	6	
5	68	.44	1.32	690.30	83	91	91	53	86	80	6	
6	72	.44	1.44	692.99	84	92	91	53	86	80	6	
7	76	.50	1.50	695.40	84	93	92	55	86	80	7	
8	80	.49	1.47	698.40	83	91	92	54	88	80	7	
9	84	.49	1.47	701.1	83	91	92	55	87	80	7	
10	88	.49	1.47	704.1	84	92	91	56	87	81	7	
11	92	.49	1.47	707.30	83	91	91	56	88	81	7	
12	96	.48	1.44	710.30	83	91	91	56	88	81	7	
				713.603								

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

Silica Gel Data (gm)	
#	Initial Final
1	
2	

Moisture Gain	
_____ ml.	_____ gm
Total _____	

Filter Data	
#	Number Tare
1	
2	
3	

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

RAMBOLL

APPENDIX D LABORATORY DATA

PPA Carbon Bed Inlet Laboratory Data

ANALYTICAL REPORT

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

Laboratory Job ID: 140-22281-1
Client Project/Site: PPA Carbon Bed Inlet

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:
3/31/2021 10:17:37 AM

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

LINKS

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

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

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



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Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
B	Compound was found in the blank and sample.

Glossary

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

Case Narrative

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Job ID: 140-22281-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative 140-22281-1

Sample Receipt

The samples were received on March 13, 2021 at 10:40 AM. The temperature of the cooler at receipt was 0.8° C.

LCMS

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

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

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

Sample results were calculated using the following equation:

Result, $\eta\text{g/sample} = (\text{on-column concentration, } \eta\text{g/mL}) \times (\text{nominal final volume of extract (10 mL)} / 1 \text{ sample}) \times \text{DF} \times \text{SF}$

Where:

DF = Instrument dilution factor

SF = Extraction Split Factor = (final volume of extract in the initial extraction batch / initial volume of extract in the "Split" batch)

For condensate, if less than the entire sample is extracted, the fraction of sample used replaces "1 sample"

Method 537 (modified): The method blank for preparation batch 140-48003 and 140-48146 contained HFPO-DA above the reporting limit (RL). The entire sample was consumed during analysis or extraction, therefore, the data have been reported.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: Z-2648 PPA CB INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE (140-22281-8), (LCS 140-47734/2-B), (LCS 140-47984/2-B), (LCSD 140-47734/3-B) and (MB 140-47734/1-B). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1.

Method 537 (modified): The method blank for preparation batch 140-47984 and 140-48079 contained HFPO-DA above the reporting limit (RL). The entire sample was consumed during analysis or extraction, therefore, the data have been reported.

Method 537 (modified): The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 140-47734 and 140-47812 and analytical batch 140-48219 recovered outside control limits for the following analyte: HFPO-DA. This analyte was biased high in the LCS/LCSD. The samples were consumed during the extraction process and therefore, the data have been reported.

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.

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Client Sample ID: Z-2635,2636 PPA CB INLET R1 OTM-45 FH

Lab Sample ID: 140-22281-1

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	193	B	1.99	1.15	ug/Sample		03/22/21 14:10	03/28/21 01:54	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>13C3 HFPO-DA</i>	<i>106</i>		<i>25 - 150</i>				<i>03/22/21 14:10</i>	<i>03/28/21 01:54</i>	<i>1</i>

Client Sample ID: Z-2637,2638,2640 PPA CB INLET R1 OTM-45

Lab Sample ID: 140-22281-2

BH

Matrix: Air

Date Collected: 03/11/21 00:00

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	26.6	*+ *1	0.800	0.700	ug/Sample		03/15/21 06:58	03/28/21 00:26	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>13C3 HFPO-DA</i>	<i>103</i>		<i>25 - 150</i>				<i>03/15/21 06:58</i>	<i>03/28/21 00:26</i>	<i>1</i>

Client Sample ID: Z-2639 PPA CB INLET R1 OTM-45

Lab Sample ID: 140-22281-3

IMPINGERS 1,2&3 COND

Matrix: Air

Date Collected: 03/11/21 00:00

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.324	B	0.0988	0.0163	ug/Sample		03/23/21 05:53	03/27/21 12:11	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>13C3 HFPO-DA</i>	<i>113</i>		<i>25 - 150</i>				<i>03/23/21 05:53</i>	<i>03/27/21 12:11</i>	<i>1</i>

Client Sample ID: Z-2641 PPA CB INLET R1 OTM-45

Lab Sample ID: 140-22281-4

BREAKTHROUGH XAD-2 RESIN TUBE

Matrix: Air

Date Collected: 03/11/21 00:00

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0104	*+ *1	0.00160	0.00140	ug/Sample		03/15/21 06:58	03/28/21 00:35	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>13C3 HFPO-DA</i>	<i>90</i>		<i>25 - 150</i>				<i>03/15/21 06:58</i>	<i>03/28/21 00:35</i>	<i>1</i>

Client Sample ID: Z-2642,2643 PPA CB INLET R2 OTM-45 FH

Lab Sample ID: 140-22281-5

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	193	B	2.00	1.16	ug/Sample		03/22/21 14:10	03/28/21 02:21	1

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Client Sample ID: Z-2642,2643 PPA CB INLET R2 OTM-45 FH

Lab Sample ID: 140-22281-5

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	106		25 - 150	03/22/21 14:10	03/28/21 02:21	1

Client Sample ID: Z-2644,2645,2647 PPA CB INLET R2 OTM-45

Lab Sample ID: 140-22281-6

BH

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	16.7	*+ *1	0.800	0.700	ug/Sample		03/15/21 06:58	03/28/21 00:44	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	109		25 - 150	03/15/21 06:58	03/28/21 00:44	1

Client Sample ID: Z-2646 PPA CB INLET R2 OTM-45

Lab Sample ID: 140-22281-7

IMPINGERS 1,2&3 COND

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.356	B	0.0975	0.0161	ug/Sample		03/23/21 05:53	03/27/21 12:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	108		25 - 150	03/23/21 05:53	03/27/21 12:20	1

Client Sample ID: Z-2648 PPA CB INLET R2 OTM-45

Lab Sample ID: 140-22281-8

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0190	*+ *1	0.00160	0.00140	ug/Sample		03/15/21 06:58	03/28/21 00:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	22	*5-	25 - 150	03/15/21 06:58	03/28/21 00:53	1

Client Sample ID: Z-2649,2650 PPA CB INLET R3 OTM-45 FH

Lab Sample ID: 140-22281-9

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	171	B	1.98	1.15	ug/Sample		03/22/21 14:10	03/28/21 02:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	106		25 - 150	03/22/21 14:10	03/28/21 02:29	1

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Client Sample ID: Z-2651,2652,2654 PPA CB INLET R3 OTM-45

Lab Sample ID: 140-22281-10

BH

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	8.84	*+ *1	0.800	0.700	ug/Sample		03/15/21 06:58	03/28/21 01:01	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	101		25 - 150				03/15/21 06:58	03/28/21 01:01	1

Client Sample ID: Z-2653 PPA CB INLET R3 OTM-45

Lab Sample ID: 140-22281-11

IMPINGERS 1,2&3 COND

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.314	B	0.105	0.0173	ug/Sample		03/23/21 05:53	03/27/21 12:29	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	111		25 - 150				03/23/21 05:53	03/27/21 12:29	1

Client Sample ID: Z-2655 PPA CB INLET R3 OTM-45

Lab Sample ID: 140-22281-12

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.421	*+ *1	0.00800	0.00700	ug/Sample		03/15/21 06:58	03/28/21 12:47	5
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	98		25 - 150				03/15/21 06:58	03/28/21 12:47	5

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

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

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

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

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)	
140-22281-1	Z-2635,2636 PPA CB INLET R1	106	
140-22281-2	Z-2637,2638,2640 PPA CB INLET R1 OTM-45 BH	103	
140-22281-3	Z-2639 PPA CB INLET R1 OTM-45 IMPINGERS 1,2&3 COND	113	
140-22281-4	Z-2641 PPA CB INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	90	
140-22281-5	Z-2642,2643 PPA CB INLET R2 OTM-45 FH	106	
140-22281-6	Z-2644,2645,2647 PPA CB INLET R2 OTM-45 BH	109	
140-22281-7	Z-2646 PPA CB INLET R2 OTM-45 IMPINGERS 1,2&3 COND	108	
140-22281-8	Z-2648 PPA CB INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	22 *5-	
140-22281-9	Z-2649,2650 PPA CB INLET R3 OTM-45 FH	106	
140-22281-10	Z-2651,2652,2654 PPA CB INLET R3 OTM-45 BH	101	
140-22281-11	Z-2653 PPA CB INLET R3 OTM-45 IMPINGERS 1,2&3 COND	111	
140-22281-12	Z-2655 PPA CB INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	98	
LCS 140-47734/2-B	Lab Control Sample	43	
LCS 140-47984/2-B	Lab Control Sample	32	
LCS 140-48003/2-B	Lab Control Sample	112	
LCSD 140-47734/3-B	Lab Control Sample Dup	33	
LCSD 140-47984/3-B	Lab Control Sample Dup	96	
LCSD 140-48003/3-B	Lab Control Sample Dup	107	
MB 140-47734/14-B	Method Blank	64	
MB 140-47734/1-B	Method Blank	45	
MB 140-47984/1-B	Method Blank	92	
MB 140-48003/1-B	Method Blank	112	

Surrogate Legend

HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-47734/14-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47734

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		03/15/21 06:58	03/27/21 23:42	1
Isotope Dilution	%Recovery	MB Qualifier	MB Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	64		25 - 150				03/15/21 06:58	03/27/21 23:42	1

Lab Sample ID: MB 140-47734/1-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47734

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		03/15/21 06:58	03/27/21 21:20	1
Isotope Dilution	%Recovery	MB Qualifier	MB Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	45		25 - 150				03/15/21 06:58	03/27/21 21:20	1

Lab Sample ID: LCS 140-47734/2-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47734

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.02128		ug/Sample		106	60 - 140
Isotope Dilution	%Recovery	LCS Qualifier	LCS Limits				
13C3 HFPO-DA	43		25 - 150				

Lab Sample ID: LCSD 140-47734/3-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 47734

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0200	0.03810	*+ *1	ug/Sample		190	60 - 140	57	30
Isotope Dilution	%Recovery	LCSD Qualifier	LCSD Limits						
13C3 HFPO-DA	33		25 - 150						

Lab Sample ID: MB 140-47984/1-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47984

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.002562		0.00100	0.000580	ug/Sample		03/22/21 14:10	03/28/21 01:28	1
Isotope Dilution	%Recovery	MB Qualifier	MB Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		25 - 150				03/22/21 14:10	03/28/21 01:28	1

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

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

Lab Sample ID: LCS 140-47984/2-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47984

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.02413		ug/Sample		121	60 - 140
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
13C3 HFPO-DA	32		25 - 150				

Lab Sample ID: LCSD 140-47984/3-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 47984

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0200	0.02295		ug/Sample		115	60 - 140	5	30
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>						
13C3 HFPO-DA	96		25 - 150						

Lab Sample ID: MB 140-48003/1-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 48003

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001514		0.000500	0.0000825	ug/Sample		03/23/21 05:53	03/27/21 11:45	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	112		25 - 150				03/23/21 05:53	03/27/21 11:45	1

Lab Sample ID: LCS 140-48003/2-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 48003

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0100	0.01114		ug/Sample		111	60 - 140
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
13C3 HFPO-DA	112		25 - 150				

Lab Sample ID: LCSD 140-48003/3-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 48003

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0100	0.01177		ug/Sample		118	60 - 140	6	30
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>						
13C3 HFPO-DA	107		25 - 150						

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

LCMS

Prep Batch: 47734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-2	Z-2637,2638,2640 PPA CB INLET R1 OTM-45 BI	Total/NA	Air	None	
140-22281-4	Z-2641 PPA CB INLET R1 OTM-45 BREAKTHRC	Total/NA	Air	None	
140-22281-6	Z-2644,2645,2647 PPA CB INLET R2 OTM-45 BI	Total/NA	Air	None	
140-22281-8	Z-2648 PPA CB INLET R2 OTM-45 BREAKTHRC	Total/NA	Air	None	
140-22281-10	Z-2651,2652,2654 PPA CB INLET R3 OTM-45 BI	Total/NA	Air	None	
140-22281-12	Z-2655 PPA CB INLET R3 OTM-45 BREAKTHRC	Total/NA	Air	None	
MB 140-47734/14-B	Method Blank	Total/NA	Air	None	
MB 140-47734/1-B	Method Blank	Total/NA	Air	None	
LCS 140-47734/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-47734/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 47812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-2	Z-2637,2638,2640 PPA CB INLET R1 OTM-45 BI	Total/NA	Air	Split	47734
140-22281-4	Z-2641 PPA CB INLET R1 OTM-45 BREAKTHRC	Total/NA	Air	Split	47734
140-22281-6	Z-2644,2645,2647 PPA CB INLET R2 OTM-45 BI	Total/NA	Air	Split	47734
140-22281-8	Z-2648 PPA CB INLET R2 OTM-45 BREAKTHRC	Total/NA	Air	Split	47734
140-22281-10	Z-2651,2652,2654 PPA CB INLET R3 OTM-45 BI	Total/NA	Air	Split	47734
140-22281-12	Z-2655 PPA CB INLET R3 OTM-45 BREAKTHRC	Total/NA	Air	Split	47734
MB 140-47734/14-B	Method Blank	Total/NA	Air	Split	47734
MB 140-47734/1-B	Method Blank	Total/NA	Air	Split	47734
LCS 140-47734/2-B	Lab Control Sample	Total/NA	Air	Split	47734
LCSD 140-47734/3-B	Lab Control Sample Dup	Total/NA	Air	Split	47734

Prep Batch: 47984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-1	Z-2635,2636 PPA CB INLET R1 OTM-45 FH	Total/NA	Air	None	
140-22281-5	Z-2642,2643 PPA CB INLET R2 OTM-45 FH	Total/NA	Air	None	
140-22281-9	Z-2649,2650 PPA CB INLET R3 OTM-45 FH	Total/NA	Air	None	
MB 140-47984/1-B	Method Blank	Total/NA	Air	None	
LCS 140-47984/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-47984/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 48003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-3	Z-2639 PPA CB INLET R1 OTM-45 IMPINGERS	Total/NA	Air	None	
140-22281-7	Z-2646 PPA CB INLET R2 OTM-45 IMPINGERS	Total/NA	Air	None	
140-22281-11	Z-2653 PPA CB INLET R3 OTM-45 IMPINGERS	Total/NA	Air	None	
MB 140-48003/1-B	Method Blank	Total/NA	Air	None	
LCS 140-48003/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-48003/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 48079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-1	Z-2635,2636 PPA CB INLET R1 OTM-45 FH	Total/NA	Air	Split	47984
140-22281-5	Z-2642,2643 PPA CB INLET R2 OTM-45 FH	Total/NA	Air	Split	47984
140-22281-9	Z-2649,2650 PPA CB INLET R3 OTM-45 FH	Total/NA	Air	Split	47984
MB 140-47984/1-B	Method Blank	Total/NA	Air	Split	47984
LCS 140-47984/2-B	Lab Control Sample	Total/NA	Air	Split	47984
LCSD 140-47984/3-B	Lab Control Sample Dup	Total/NA	Air	Split	47984

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

LCMS

Cleanup Batch: 48146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-3	Z-2639 PPA CB INLET R1 OTM-45 IMPINGERS	Total/NA	Air	Split	48003
140-22281-7	Z-2646 PPA CB INLET R2 OTM-45 IMPINGERS	Total/NA	Air	Split	48003
140-22281-11	Z-2653 PPA CB INLET R3 OTM-45 IMPINGERS	Total/NA	Air	Split	48003
MB 140-48003/1-B	Method Blank	Total/NA	Air	Split	48003
LCS 140-48003/2-B	Lab Control Sample	Total/NA	Air	Split	48003
LCSD 140-48003/3-B	Lab Control Sample Dup	Total/NA	Air	Split	48003

Analysis Batch: 48210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-3	Z-2639 PPA CB INLET R1 OTM-45 IMPINGERS	Total/NA	Air	537 (modified)	48146
140-22281-7	Z-2646 PPA CB INLET R2 OTM-45 IMPINGERS	Total/NA	Air	537 (modified)	48146
140-22281-11	Z-2653 PPA CB INLET R3 OTM-45 IMPINGERS	Total/NA	Air	537 (modified)	48146
MB 140-48003/1-B	Method Blank	Total/NA	Air	537 (modified)	48146
LCS 140-48003/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	48146
LCSD 140-48003/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	48146

Cleanup Batch: 48218

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-1	Z-2635,2636 PPA CB INLET R1 OTM-45 FH	Total/NA	Air	Dilution	48079
140-22281-2	Z-2637,2638,2640 PPA CB INLET R1 OTM-45 BI	Total/NA	Air	Dilution	47812
140-22281-5	Z-2642,2643 PPA CB INLET R2 OTM-45 FH	Total/NA	Air	Dilution	48079
140-22281-6	Z-2644,2645,2647 PPA CB INLET R2 OTM-45 BI	Total/NA	Air	Dilution	47812
140-22281-9	Z-2649,2650 PPA CB INLET R3 OTM-45 FH	Total/NA	Air	Dilution	48079
140-22281-10	Z-2651,2652,2654 PPA CB INLET R3 OTM-45 BI	Total/NA	Air	Dilution	47812

Analysis Batch: 48219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-1	Z-2635,2636 PPA CB INLET R1 OTM-45 FH	Total/NA	Air	537 (modified)	48218
140-22281-2	Z-2637,2638,2640 PPA CB INLET R1 OTM-45 BI	Total/NA	Air	537 (modified)	48218
140-22281-4	Z-2641 PPA CB INLET R1 OTM-45 BREAKTHRC	Total/NA	Air	537 (modified)	47812
140-22281-5	Z-2642,2643 PPA CB INLET R2 OTM-45 FH	Total/NA	Air	537 (modified)	48218
140-22281-6	Z-2644,2645,2647 PPA CB INLET R2 OTM-45 BI	Total/NA	Air	537 (modified)	48218
140-22281-8	Z-2648 PPA CB INLET R2 OTM-45 BREAKTHRC	Total/NA	Air	537 (modified)	47812
140-22281-9	Z-2649,2650 PPA CB INLET R3 OTM-45 FH	Total/NA	Air	537 (modified)	48218
140-22281-10	Z-2651,2652,2654 PPA CB INLET R3 OTM-45 BI	Total/NA	Air	537 (modified)	48218
MB 140-47734/14-B	Method Blank	Total/NA	Air	537 (modified)	47812
MB 140-47734/1-B	Method Blank	Total/NA	Air	537 (modified)	47812
MB 140-47984/1-B	Method Blank	Total/NA	Air	537 (modified)	48079
LCS 140-47734/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	47812
LCS 140-47984/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	48079
LCSD 140-47734/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	47812
LCSD 140-47984/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	48079

Analysis Batch: 48223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22281-12	Z-2655 PPA CB INLET R3 OTM-45 BREAKTHRC	Total/NA	Air	537 (modified)	47812

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Client Sample ID: Z-2635,2636 PPA CB INLET R1 OTM-45 FH

Lab Sample ID: 140-22281-1

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	133 mL	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			67 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Cleanup	Dilution			5 uL	10000 uL	48218	03/27/21 05:30	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 01:54	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Z-2637,2638,2640 PPA CB INLET R1 OTM-45

Lab Sample ID: 140-22281-2

BH

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Cleanup	Dilution			20 uL	10000 uL	48218	03/27/21 05:30	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 00:26	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Z-2639 PPA CB INLET R1 OTM-45

Lab Sample ID: 140-22281-3

IMPINGERS 1,2&3 COND

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00506 Sample	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 12:11	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Z-2641 PPA CB INLET R1 OTM-45

Lab Sample ID: 140-22281-4

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 00:35	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Client Sample ID: Z-2642,2643 PPA CB INLET R2 OTM-45 FH

Lab Sample ID: 140-22281-5

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			45 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Cleanup	Dilution			5 uL	10000 uL	48218	03/27/21 05:30	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 02:21	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Z-2644,2645,2647 PPA CB INLET R2 OTM-45

Lab Sample ID: 140-22281-6

BH

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Cleanup	Dilution			20 uL	10000 uL	48218	03/27/21 05:30	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 00:44	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Z-2646 PPA CB INLET R2 OTM-45

Lab Sample ID: 140-22281-7

IMPINGERS 1,2&3 COND

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00513 Sample	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 12:20	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Z-2648 PPA CB INLET R2 OTM-45

Lab Sample ID: 140-22281-8

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 00:53	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Client Sample ID: Z-2649,2650 PPA CB INLET R3 OTM-45 FH

Lab Sample ID: 140-22281-9

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	103 mL	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			52 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Cleanup	Dilution			5 uL	10000 uL	48218	03/27/21 05:30	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 02:29	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Z-2651,2652,2654 PPA CB INLET R3 OTM-45

Lab Sample ID: 140-22281-10

BH

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Cleanup	Dilution			20 uL	10000 uL	48218	03/27/21 05:30	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 01:01	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Z-2653 PPA CB INLET R3 OTM-45

Lab Sample ID: 140-22281-11

IMPINGERS 1,2&3 COND

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00476 Sample	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 12:29	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Z-2655 PPA CB INLET R3 OTM-45

Lab Sample ID: 140-22281-12

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		5			48223	03/28/21 12:47	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Client Sample ID: Method Blank

Lab Sample ID: MB 140-47734/14-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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/27/21 23:42	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-47734/1-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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/27/21 21:20	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-47984/1-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	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 01:28	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-48003/1-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	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 11:45	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-47734/2-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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/27/21 21:29	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-47984/2-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	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 01:37	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-48003/2-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	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 11:54	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-47734/3-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	47734	03/15/21 06:58	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	47812	03/17/21 08:03	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/27/21 21:37	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-47984/3-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	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 01:45	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-48003/3-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	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 12:02	JRC	TAL KNX
Instrument ID: LCA										

Laboratory References:

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

Eurofins TestAmerica, Knoxville

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-22
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	10-31-21
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-31-22
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-22
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	04-01-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-01-22
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	01-02-22
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

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

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Inlet

Job ID: 140-22281-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-22281-1	Z-2635,2636 PPA CB INLET R1 OTM-45 FH	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-2	Z-2637,2638,2640 PPA CB INLET R1 OTM-45 Bt	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-3	Z-2639 PPA CB INLET R1 OTM-45 IMPINGERS 1,2&3 COND	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-4	Z-2641 PPA CB INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-5	Z-2642,2643 PPA CB INLET R2 OTM-45 FH	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-6	Z-2644,2645,2647 PPA CB INLET R2 OTM-45 Bt	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-7	Z-2646 PPA CB INLET R2 OTM-45 IMPINGERS 1,2&3 COND	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-8	Z-2648 PPA CB INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-9	Z-2649,2650 PPA CB INLET R3 OTM-45 FH	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-10	Z-2651,2652,2654 PPA CB INLET R3 OTM-45 Bt	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-11	Z-2653 PPA CB INLET R3 OTM-45 IMPINGERS 1,2&3 COND	Air	03/11/21 00:00	03/13/21 10:40	
140-22281-12	Z-2655 PPA CB INLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	03/11/21 00:00	03/13/21 10:40	

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


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

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

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

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

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

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Z-2635 PPA CB Inlet R1 OTM-45 Filter (Combine with Z-2636)	1	3/11/21		250 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.
Z-2636 PPA CB Inlet R1 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with Z-2635)	1	3/11/21		250 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the Filter extraction.
Z-2637 PPA CB Inlet R1 OTM-45 XAD-2 Resin Tube  140-22281 Chain of Custody	1	3/11/21		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. Analyze for HFPO-DA and PFOA.



Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Z-2638 PPA CB Inlet R1 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with Z-2637)	1	3/11/21		250 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
Z-2639 PPA CB Inlet R1 OTM-45 Impingers 1,2 & 3 Condensate	1	3/11/21		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.
Z-2640 PPA CB Inlet R1 OTM-45 Impinger Glassware MeOH Rinse (Combine with Z-2637)	1	3/11/21		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
Z-2641 PPA CB Inlet R1 OTM-45 Breakthrough XAD-2 Resin Tube	1	3/11/21		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.
Z-2642 PPA CB Inlet R2 OTM-45 Filter (Combine with Z-2643)	2	3/11/21		250 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.
Z-2643 PPA CB Inlet R2 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with Z-2642)	2	3/11/21		250 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the Filter extraction.

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Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Z-2644 PPA CB Inlet R2 OTM-45 XAD-2 Resin Tube	2	3/11/21		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. Analyze for HFPO-DA and PFOA.
Z-2645 PPA CB Inlet R2 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with Z-2644)	2	3/11/21		250 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
Z-2646 PPA CB Inlet R2 OTM-45 Impingers 1,2 & 3 Condensate	2	3/11/21		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.
Z-2647 PPA CB Inlet R2 OTM-45 Impinger Glassware MeOH Rinse (Combine with Z-2644)	2	3/11/21		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
Z-2648 PPA CB Inlet R2 OTM-45 Breakthrough XAD-2 Resin Tube	2	3/11/21		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.
Z-2649 PPA CB Inlet R3 OTM-45 Filter (Combine with Z-2650)	3	3/11/21		250 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.

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Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Z-2650 PPA CB Inlet R3 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with Z-2649)	3	3/11/21		250 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the Filter extraction.
Z-2651 PPA CB Inlet R3 OTM-45 XAD-2 Resin Tube	3	3/11/21		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. Analyze for HFPO-DA and PFOA.
Z-2652 PPA CB Inlet R3 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with Z-2651)	3	3/11/21		250 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
Z-2653 PPA CB Inlet R3 OTM-45 Impingers 1,2 & 3 Condensate	3	3/11/21		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.
Z-2654 PPA CB Inlet R3 OTM-45 Impinger Glassware MeOH Rinse (Combine with Z-2651)	3	3/11/21		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
Z-2655 PPA CB Inlet R3 OTM-45 Breakthrough XAD-2 Resin Tube	3	3/11/21		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.

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Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:

Comments

(Please write "NONE" if no comment applicable)

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

NONE

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

RT 1.1 / COOL

(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 CUSTOMER SEALS

Custody Transfer:

Relinquished By:	<u>Patricia May</u> Name	<u>Rambell</u> Company	<u>3/12/21 1800</u> Date/Time
Accepted By:	<u>Doug Gill</u> Name	<u>ETA KNOX</u> Company	<u>3/12/21 1800</u> Date/Time
Relinquished By:	<u>Doug Gill</u> Name	<u>ETA KOX</u> Company	<u>3/13/21 1040</u> Date/Time
Accepted By:	<u>Ken Wh</u> Name	<u>ETA</u> Company	<u>3/13/21 1040</u> Date/Time
Relinquished By:	_____ Name	_____ Company	_____ Date/Time
Accepted By:	_____ Name	_____ Company	_____ Date/Time
Relinquished By:	_____ Name	_____ Company	_____ Date/Time
Accepted By:	_____ Name	_____ Company	_____ Date/Time

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

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	/		NA		
2. Were ambient air containers received intact?			/	<input type="checkbox"/> Containers, Broken	
3. The coolers/containers custody seal if present, is it intact?			/	<input type="checkbox"/> Checked in lab <input type="checkbox"/> Yes <input type="checkbox"/> NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : <u>SC70</u> Correction factor: <u>-0.3°C</u>	/			<input type="checkbox"/> Cooler Out of Temp, Client Contacted, Proceed/Cancel <input type="checkbox"/> Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?	/			<input type="checkbox"/> Containers, Broken	
6. Were samples received in appropriate containers?	/			<input type="checkbox"/> Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	/			<input type="checkbox"/> COC & Samples Do Not Match <input type="checkbox"/> COC Incorrect/Incomplete <input type="checkbox"/> COC Not Received	
8. Were all of the samples listed on the COC received?	/			<input type="checkbox"/> Sample Received, Not on COC <input type="checkbox"/> Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	/			<input type="checkbox"/> COC; No Date/Time; Client Contacted	Labeling Verified by: _____ Date: _____
10. Was the sampler identified on the COC?	/		/	<input type="checkbox"/> Sampler Not Listed on COC	pH test strip lot number: _____
11. Is the client and project name/# identified?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	/			<input type="checkbox"/> COC No tests on COC	
13. Is the matrix of the samples noted?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	/			<input type="checkbox"/> COC Incorrect/Incomplete	Box 16A: pH Preservation Box 18A: Residual Chlorine
15. Were samples received within holding time?	/			<input type="checkbox"/> Holding Time - Receipt	Preservative: _____
16. Were samples received with correct chemical preservative (excluding Encore)?	/		/	<input type="checkbox"/> pH Adjusted, pH Included (See box 16A)	Lot Number: _____
17. Were VOA samples received without headspace?	/		/	<input type="checkbox"/> Incorrect Preservative	Exp Date: _____
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____	/		/	<input type="checkbox"/> Headspace (VOA only) <input type="checkbox"/> Residual Chlorine	Analyst: _____
19. For 1613B water samples is pH<9?	/		/		Date: _____
20. For rad samples was sample activity info. Provided?	/		/	<input type="checkbox"/> If no, notify lab to adjust <input type="checkbox"/> Project missing info	Time: _____
Project #: _____					
PM Instructions: _____					

Sample Receiving Associate: Randy Cannon Date: 3-13-21 QA026R32.doc, 062719



PPA Carbon Bed Outlet Laboratory Data

ANALYTICAL REPORT

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

Laboratory Job ID: 140-22283-1
Client Project/Site: PPA Carbon Bed Outlet

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:
4/6/2021 1:18:42 PM

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

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

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



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Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.

Glossary

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

Case Narrative

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Job ID: 140-22283-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative 140-22283-1

Sample Receipt

The samples were received on 3/13/2021 10:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.4° C.

LCMS

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

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

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

Sample results were calculated using the following equation:

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

Where:

DF = Instrument dilution factor

SF = Extraction Split Factor = (final volume of extract in the initial extraction batch / initial volume of extract in the "Split" batch)

For condensate, if less than the entire sample is extracted, the fraction of sample used replaces "1 sample"

Method 537 (modified): The method blank for preparation batch 140-48003 and 140-48146 contained HFPO-DA above the reporting limit (RL). The entire sample was consumed during analysis or extraction, therefore, the data have been reported.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: (LCS 140-47984/2-B). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1.

Method 537 (modified): The method blank for preparation batch 140-47984 and 140-48079 contained HFPO-DA above the reporting limit (RL). The entire sample was consumed during analysis or extraction, therefore, the data have been reported.

Method 537 (modified): The method blank for preparation batch 140-47947 and 140-48222 contained HFPO-DA above the reporting limit (RL). Most client samples are not 10X the method blank contamination. The entire sample was consumed during analysis or extraction, therefore, the data have been reported.

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: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Client Sample ID: Q-1958,1959 PPA CB OUTLET R1 OTM-45 FH

Lab Sample ID: 140-22283-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	6.21	B	0.100	0.0580	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1960,1961,1963 PPA CB OUTLET R1 OTM-45 BH

Lab Sample ID: 140-22283-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.31	B	0.0160	0.0140	ug/Sample	10		537 (modified)	Total/NA

Client Sample ID: Q-1962 PPA CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-22283-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.296	B	0.0899	0.0148	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1964 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-22283-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0175	B	0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1965,1966 PPA CB OUTLET R2 OTM-45 FH

Lab Sample ID: 140-22283-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	4.02	B	0.0991	0.0575	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1967,1968,1970 PPA CB OUTLET R2 OTM-45 BH

Lab Sample ID: 140-22283-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.13	B	0.0160	0.0140	ug/Sample	10		537 (modified)	Total/NA

Client Sample ID: Q-1969 PPA CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-22283-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.365	B	0.111	0.0184	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1971 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-22283-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0224	B	0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: Q-1972,1973 PPA CB OUTLET R3 OTM-45 FH

Lab Sample ID: 140-22283-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.68	B	0.100	0.0580	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

**Client Sample ID: Q-1974,1975,1977 PPA CB OUTLET R3
OTM-45 BH**

Lab Sample ID: 140-22283-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.710	B	0.00800	0.00700	ug/Sample	5		537 (modified)	Total/NA

**Client Sample ID: Q-1976 PPA CB OUTLET R3 OTM-45
IMPINGERS 1,2&3 COND**

Lab Sample ID: 140-22283-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.333	B	0.0899	0.0148	ug/Sample	1		537 (modified)	Total/NA

**Client Sample ID: Q-1978 PPA CB OUTLET R3 OTM-45
BREAKTHROUGH XAD-2 RESIN TUBE**

Lab Sample ID: 140-22283-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0192	B	0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Client Sample ID: Q-1958,1959 PPA CB OUTLET R1 OTM-45 FH

Lab Sample ID: 140-22283-1

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	6.21	B	0.100	0.0580	ug/Sample		03/22/21 14:10	03/28/21 03:05	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	101		25 - 150				03/22/21 14:10	03/28/21 03:05	1

Client Sample ID: Q-1960,1961,1963 PPA CB OUTLET R1 OTM-45 BH

Lab Sample ID: 140-22283-2

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.31	B	0.0160	0.0140	ug/Sample		03/22/21 09:12	04/02/21 13:44	10
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	98		25 - 150				03/22/21 09:12	04/02/21 13:44	10

Client Sample ID: Q-1962 PPA CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-22283-3

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.296	B	0.0899	0.0148	ug/Sample		03/23/21 05:53	03/27/21 13:21	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	102		25 - 150				03/23/21 05:53	03/27/21 13:21	1

Client Sample ID: Q-1964 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-22283-4

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0175	B	0.00160	0.00140	ug/Sample		03/22/21 09:12	04/01/21 19:06	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	82		25 - 150				03/22/21 09:12	04/01/21 19:06	1

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Client Sample ID: Q-1965,1966 PPA CB OUTLET R2 OTM-45 FH

Lab Sample ID: 140-22283-5

Date Collected: 03/11/21 00:00
 Date Received: 03/13/21 10:40
 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	4.02	B	0.0991	0.0575	ug/Sample		03/22/21 14:10	03/28/21 03:14	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	108		25 - 150				03/22/21 14:10	03/28/21 03:14	1

Client Sample ID: Q-1967,1968,1970 PPA CB OUTLET R2 OTM-45 BH

Lab Sample ID: 140-22283-6

Date Collected: 03/11/21 00:00
 Date Received: 03/13/21 10:40
 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	1.13	B	0.0160	0.0140	ug/Sample		03/22/21 09:12	04/02/21 15:14	10
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	98		25 - 150				03/22/21 09:12	04/02/21 15:14	10

Client Sample ID: Q-1969 PPA CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-22283-7

Date Collected: 03/11/21 00:00
 Date Received: 03/13/21 10:40
 Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.365	B	0.111	0.0184	ug/Sample		03/23/21 05:53	03/27/21 13:30	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	107		25 - 150				03/23/21 05:53	03/27/21 13:30	1

Client Sample ID: Q-1971 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-22283-8

Date Collected: 03/11/21 00:00
 Date Received: 03/13/21 10:40
 Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0224	B	0.00160	0.00140	ug/Sample		03/22/21 09:12	04/01/21 19:24	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	84		25 - 150				03/22/21 09:12	04/01/21 19:24	1

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Client Sample ID: Q-1972,1973 PPA CB OUTLET R3 OTM-45

Lab Sample ID: 140-22283-9

FH

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.68	B	0.100	0.0580	ug/Sample		03/22/21 14:10	03/28/21 03:22	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	110		25 - 150				03/22/21 14:10	03/28/21 03:22	1

Client Sample ID: Q-1974,1975,1977 PPA CB OUTLET R3

Lab Sample ID: 140-22283-10

OTM-45 BH

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.710	B	0.00800	0.00700	ug/Sample		03/22/21 09:12	04/02/21 14:01	5
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	96		25 - 150				03/22/21 09:12	04/02/21 14:01	5

Client Sample ID: Q-1976 PPA CB OUTLET R3 OTM-45

Lab Sample ID: 140-22283-11

IMPINGERS 1,2&3 COND

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.333	B	0.0899	0.0148	ug/Sample		03/23/21 05:53	03/27/21 13:39	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	102		25 - 150				03/23/21 05:53	03/27/21 13:39	1

Client Sample ID: Q-1978 PPA CB OUTLET R3 OTM-45

Lab Sample ID: 140-22283-12

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0192	B	0.00160	0.00140	ug/Sample		03/22/21 09:12	04/01/21 19:50	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	85		25 - 150				03/22/21 09:12	04/01/21 19:50	1

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

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)			
140-22283-1	Q-1958,1959 PPA CB OUTLET I	101			
140-22283-2	Q-1960,1961,1963 PPA CB OUTLET R1 OTM-45 BH	98			
140-22283-3	Q-1962 PPA CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND	102			
140-22283-4	Q-1964 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	82			
140-22283-5	Q-1965,1966 PPA CB OUTLET R2 OTM-45 FH	108			
140-22283-6	Q-1967,1968,1970 PPA CB OUTLET R2 OTM-45 BH	98			
140-22283-7	Q-1969 PPA CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND	107			
140-22283-8	Q-1971 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	84			
140-22283-9	Q-1972,1973 PPA CB OUTLET R3 OTM-45 FH	110			
140-22283-10	Q-1974,1975,1977 PPA CB OUTLET R3 OTM-45 BH	96			
140-22283-11	Q-1976 PPA CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND	102			
140-22283-12	Q-1978 PPA CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	85			
LCS 140-47947/2-B	Lab Control Sample	83			
LCS 140-47984/2-B	Lab Control Sample	32			
LCS 140-48003/2-B	Lab Control Sample	112			
LCSD 140-47947/3-B	Lab Control Sample Dup	60			
LCSD 140-47984/3-B	Lab Control Sample Dup	96			
LCSD 140-48003/3-B	Lab Control Sample Dup	107			
MB 140-47947/14-B	Method Blank	75			
MB 140-47947/1-B	Method Blank	89			
MB 140-47984/1-B	Method Blank	92			
MB 140-48003/1-B	Method Blank	112			

Surrogate Legend

HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-47947/14-B
Matrix: Air
Analysis Batch: 48419

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47947

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.002401		0.00160	0.00140	ug/Sample		03/22/21 09:12	04/01/21 19:32	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	75		25 - 150				03/22/21 09:12	04/01/21 19:32	1

Lab Sample ID: MB 140-47947/1-B
Matrix: Air
Analysis Batch: 48419

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47947

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.003211		0.00160	0.00140	ug/Sample		03/22/21 09:12	04/01/21 17:20	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	89		25 - 150				03/22/21 09:12	04/01/21 17:20	1

Lab Sample ID: LCS 140-47947/2-B
Matrix: Air
Analysis Batch: 48419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47947

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.02402		ug/Sample		120	60 - 140
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits				
13C3 HFPO-DA	83		25 - 150				

Lab Sample ID: LCSD 140-47947/3-B
Matrix: Air
Analysis Batch: 48419

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 47947

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
HFPO-DA	0.0200	0.02278		ug/Sample		114	60 - 140	5	30
Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits						
13C3 HFPO-DA	60		25 - 150						

Lab Sample ID: MB 140-47984/1-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47984

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.002562		0.00100	0.000580	ug/Sample		03/22/21 14:10	03/28/21 01:28	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		25 - 150				03/22/21 14:10	03/28/21 01:28	1

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

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

Lab Sample ID: LCS 140-47984/2-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47984

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.02413		ug/Sample		121	60 - 140
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
13C3 HFPO-DA	32		25 - 150				

Lab Sample ID: LCSD 140-47984/3-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 47984

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
HFPO-DA	0.0200	0.02295		ug/Sample		115	60 - 140	5	30
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>						
13C3 HFPO-DA	96		25 - 150						

Lab Sample ID: MB 140-48003/1-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 48003

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001514		0.000500	0.0000825	ug/Sample		03/23/21 05:53	03/27/21 11:45	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	112		25 - 150				03/23/21 05:53	03/27/21 11:45	1

Lab Sample ID: LCS 140-48003/2-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 48003

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0100	0.01114		ug/Sample		111	60 - 140
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
13C3 HFPO-DA	112		25 - 150				

Lab Sample ID: LCSD 140-48003/3-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 48003

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
HFPO-DA	0.0100	0.01177		ug/Sample		118	60 - 140	6	30
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>						
13C3 HFPO-DA	107		25 - 150						

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

LCMS

Prep Batch: 47947

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-2	Q-1960,1961,1963 PPA CB OUTLET R1 OTM-45	Total/NA	Air	None	
140-22283-4	Q-1964 PPA CB OUTLET R1 OTM-45 BREAKTH	Total/NA	Air	None	
140-22283-6	Q-1967,1968,1970 PPA CB OUTLET R2 OTM-45	Total/NA	Air	None	
140-22283-8	Q-1971 PPA CB OUTLET R2 OTM-45 BREAKTH	Total/NA	Air	None	
140-22283-10	Q-1974,1975,1977 PPA CB OUTLET R3 OTM-45	Total/NA	Air	None	
140-22283-12	Q-1978 PPA CB OUTLET R3 OTM-45 BREAKTH	Total/NA	Air	None	
MB 140-47947/14-B	Method Blank	Total/NA	Air	None	
MB 140-47947/1-B	Method Blank	Total/NA	Air	None	
LCS 140-47947/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-47947/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 47984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-1	Q-1958,1959 PPA CB OUTLET R1 OTM-45 FH	Total/NA	Air	None	
140-22283-5	Q-1965,1966 PPA CB OUTLET R2 OTM-45 FH	Total/NA	Air	None	
140-22283-9	Q-1972,1973 PPA CB OUTLET R3 OTM-45 FH	Total/NA	Air	None	
MB 140-47984/1-B	Method Blank	Total/NA	Air	None	
LCS 140-47984/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-47984/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 48003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-3	Q-1962 PPA CB OUTLET R1 OTM-45 IMPINGEF	Total/NA	Air	None	
140-22283-7	Q-1969 PPA CB OUTLET R2 OTM-45 IMPINGEF	Total/NA	Air	None	
140-22283-11	Q-1976 PPA CB OUTLET R3 OTM-45 IMPINGEF	Total/NA	Air	None	
MB 140-48003/1-B	Method Blank	Total/NA	Air	None	
LCS 140-48003/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-48003/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 48079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-1	Q-1958,1959 PPA CB OUTLET R1 OTM-45 FH	Total/NA	Air	Split	47984
140-22283-5	Q-1965,1966 PPA CB OUTLET R2 OTM-45 FH	Total/NA	Air	Split	47984
140-22283-9	Q-1972,1973 PPA CB OUTLET R3 OTM-45 FH	Total/NA	Air	Split	47984
MB 140-47984/1-B	Method Blank	Total/NA	Air	Split	47984
LCS 140-47984/2-B	Lab Control Sample	Total/NA	Air	Split	47984
LCSD 140-47984/3-B	Lab Control Sample Dup	Total/NA	Air	Split	47984

Cleanup Batch: 48146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-3	Q-1962 PPA CB OUTLET R1 OTM-45 IMPINGEF	Total/NA	Air	Split	48003
140-22283-7	Q-1969 PPA CB OUTLET R2 OTM-45 IMPINGEF	Total/NA	Air	Split	48003
140-22283-11	Q-1976 PPA CB OUTLET R3 OTM-45 IMPINGEF	Total/NA	Air	Split	48003
MB 140-48003/1-B	Method Blank	Total/NA	Air	Split	48003
LCS 140-48003/2-B	Lab Control Sample	Total/NA	Air	Split	48003
LCSD 140-48003/3-B	Lab Control Sample Dup	Total/NA	Air	Split	48003

Analysis Batch: 48210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-3	Q-1962 PPA CB OUTLET R1 OTM-45 IMPINGEF	Total/NA	Air	537 (modified)	48146
140-22283-7	Q-1969 PPA CB OUTLET R2 OTM-45 IMPINGEF	Total/NA	Air	537 (modified)	48146

Eurofins TestAmerica, Knoxville

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

LCMS (Continued)

Analysis Batch: 48210 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-11	Q-1976 PPA CB OUTLET R3 OTM-45 IMPINGEF	Total/NA	Air	537 (modified)	48146
MB 140-48003/1-B	Method Blank	Total/NA	Air	537 (modified)	48146
LCS 140-48003/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	48146
LCSD 140-48003/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	48146

Cleanup Batch: 48218

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-1	Q-1958,1959 PPA CB OUTLET R1 OTM-45 FH	Total/NA	Air	Dilution	48079
140-22283-5	Q-1965,1966 PPA CB OUTLET R2 OTM-45 FH	Total/NA	Air	Dilution	48079
140-22283-9	Q-1972,1973 PPA CB OUTLET R3 OTM-45 FH	Total/NA	Air	Dilution	48079

Analysis Batch: 48219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-1	Q-1958,1959 PPA CB OUTLET R1 OTM-45 FH	Total/NA	Air	537 (modified)	48218
140-22283-5	Q-1965,1966 PPA CB OUTLET R2 OTM-45 FH	Total/NA	Air	537 (modified)	48218
140-22283-9	Q-1972,1973 PPA CB OUTLET R3 OTM-45 FH	Total/NA	Air	537 (modified)	48218
MB 140-47984/1-B	Method Blank	Total/NA	Air	537 (modified)	48079
LCS 140-47984/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	48079
LCSD 140-47984/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	48079

Cleanup Batch: 48222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-2	Q-1960,1961,1963 PPA CB OUTLET R1 OTM-45	Total/NA	Air	Split	47947
140-22283-4	Q-1964 PPA CB OUTLET R1 OTM-45 BREAKTH	Total/NA	Air	Split	47947
140-22283-6	Q-1967,1968,1970 PPA CB OUTLET R2 OTM-45	Total/NA	Air	Split	47947
140-22283-8	Q-1971 PPA CB OUTLET R2 OTM-45 BREAKTH	Total/NA	Air	Split	47947
140-22283-10	Q-1974,1975,1977 PPA CB OUTLET R3 OTM-45	Total/NA	Air	Split	47947
140-22283-12	Q-1978 PPA CB OUTLET R3 OTM-45 BREAKTH	Total/NA	Air	Split	47947
MB 140-47947/14-B	Method Blank	Total/NA	Air	Split	47947
MB 140-47947/1-B	Method Blank	Total/NA	Air	Split	47947
LCS 140-47947/2-B	Lab Control Sample	Total/NA	Air	Split	47947
LCSD 140-47947/3-B	Lab Control Sample Dup	Total/NA	Air	Split	47947

Analysis Batch: 48419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-4	Q-1964 PPA CB OUTLET R1 OTM-45 BREAKTH	Total/NA	Air	537 (modified)	48222
140-22283-8	Q-1971 PPA CB OUTLET R2 OTM-45 BREAKTH	Total/NA	Air	537 (modified)	48222
140-22283-12	Q-1978 PPA CB OUTLET R3 OTM-45 BREAKTH	Total/NA	Air	537 (modified)	48222
MB 140-47947/14-B	Method Blank	Total/NA	Air	537 (modified)	48222
MB 140-47947/1-B	Method Blank	Total/NA	Air	537 (modified)	48222
LCS 140-47947/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	48222
LCSD 140-47947/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	48222

Analysis Batch: 48462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22283-2	Q-1960,1961,1963 PPA CB OUTLET R1 OTM-45	Total/NA	Air	537 (modified)	48222
140-22283-6	Q-1967,1968,1970 PPA CB OUTLET R2 OTM-45	Total/NA	Air	537 (modified)	48222
140-22283-10	Q-1974,1975,1977 PPA CB OUTLET R3 OTM-45	Total/NA	Air	537 (modified)	48222

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Client Sample ID: Q-1958,1959 PPA CB OUTLET R1 OTM-45 FH

Lab Sample ID: 140-22283-1

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	72 mL	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			36 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	48218	03/27/21 05:30	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 03:05	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Q-1960,1961,1963 PPA CB OUTLET R1 OTM-45 BH

Lab Sample ID: 140-22283-2

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47947	03/22/21 09:12	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	48222	03/28/21 06:44	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		10			48462	04/02/21 13:44	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Q-1962 PPA CB OUTLET R1 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-22283-3

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00556 Sample	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 13:21	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Q-1964 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-22283-4

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47947	03/22/21 09:12	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	48222	03/28/21 06:44	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48419	04/01/21 19:06	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Client Sample ID: Q-1965,1966 PPA CB OUTLET R2 OTM-45 FH

Lab Sample ID: 140-22283-5

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	109 mL	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			55 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	48218	03/27/21 05:30	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 03:14	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Q-1967,1968,1970 PPA CB OUTLET R2 OTM-45 BH

Lab Sample ID: 140-22283-6

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47947	03/22/21 09:12	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	48222	03/28/21 06:44	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		10			48462	04/02/21 15:14	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Q-1969 PPA CB OUTLET R2 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-22283-7

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00449 Sample	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 13:30	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Q-1971 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-22283-8

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47947	03/22/21 09:12	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	48222	03/28/21 06:44	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48419	04/01/21 19:24	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Client Sample ID: Q-1972,1973 PPA CB OUTLET R3 OTM-45 FH

Lab Sample ID: 140-22283-9

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	142 mL	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			71 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	48218	03/27/21 05:30	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			48219	03/28/21 03:22	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Q-1974,1975,1977 PPA CB OUTLET R3 OTM-45 BH

Lab Sample ID: 140-22283-10

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47947	03/22/21 09:12	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	48222	03/28/21 06:44	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		5			48462	04/02/21 14:01	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Q-1976 PPA CB OUTLET R3 OTM-45 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-22283-11

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00556 Sample	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 13:39	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: Q-1978 PPA CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-22283-12

Date Collected: 03/11/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47947	03/22/21 09:12	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	48222	03/28/21 06:44	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48419	04/01/21 19:50	JRC	TAL KNX
Instrument ID: LCA										

Laboratory References:

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

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-22
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	10-31-21
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-31-22
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-22
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-22
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-01-22
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	01-02-22
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

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

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Outlet

Job ID: 140-22283-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-22283-1	Q-1958,1959 PPA CB OUTLET R1 OTM-45 FH	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-2	Q-1960,1961,1963 PPA CB OUTLET R1 OTM-45 BH	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-3	Q-1962 PPA CB OUTLET R1 OTM-45 IMPINGEF 1,2&3 COND	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-4	Q-1964 PPA CB OUTLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-5	Q-1965,1966 PPA CB OUTLET R2 OTM-45 FH	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-6	Q-1967,1968,1970 PPA CB OUTLET R2 OTM-45 BH	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-7	Q-1969 PPA CB OUTLET R2 OTM-45 IMPINGEF 1,2&3 COND	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-8	Q-1971 PPA CB OUTLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-9	Q-1972,1973 PPA CB OUTLET R3 OTM-45 FH	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-10	Q-1974,1975,1977 PPA CB OUTLET R3 OTM-45 BH	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-11	Q-1976 PPA CB OUTLET R3 OTM-45 IMPINGEF 1,2&3 COND	Air	03/11/21 00:00	03/13/21 10:40	
140-22283-12	Q-1978 PPA CB OUTLET R3 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	03/11/21 00:00	03/13/21 10:40	

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



Environment Testing
 TestAmerica

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

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

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

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

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

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1958 PPA CB Outlet R1 OTM-45 Filter (Combine with Q-1959)	1	3/11/21		250 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.
Q-1959 PPA CB Outlet R1 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with Q-1958)	1	3/11/21		250 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the Filter extraction.
Q-1960 PPA CB Outlet R1 OTM-45 XAD-2 Resin Tube	1	3/11/21		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. Analyze for HFPO-DA and PFOA.



140-22283 Chain of Custody

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1961 PPA CB Outlet R1 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with Q-1960)	1	3/11/21		250 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
Q-1962 PPA CB Outlet R1 OTM-45 Impingers 1,2 & 3 Condensate	1	3/11/21		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.
Q-1963 PPA CB Outlet R1 OTM-45 Impinger Glassware MeOH Rinse (Combine with Q-1960)	1	3/11/21		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
Q-1964 PPA CB Outlet R1 OTM-45 Breakthrough XAD-2 Resin Tube	1	3/11/21		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.
Q-1965 PPA CB Outlet R2 OTM-45 Filter (Combine with Q-1966)	2	3/11/21		250 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.
Q-1966 PPA CB Outlet R2 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with Q-1965)	2	3/11/21		250 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1967 PPA CB Outlet R2 OTM-45 XAD-2 Resin Tube	2	3/11/21		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. Analyze for HFPO-DA and PFOA.
Q-1968 PPA CB Outlet R2 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with Q-1967)	2	3/11/21		250 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
Q-1969 PPA CB Outlet R2 OTM-45 Impingers 1,2 & 3 Condensate	2	3/11/21		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.
Q-1970 PPA CB Outlet R2 OTM-45 Impinger Glassware MeOH Rinse (Combine with Q-1967)	2	3/11/21		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
Q-1971 PPA CB Outlet R2 OTM-45 Breakthrough XAD-2 Resin Tube	2	3/11/21		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.
Q-1972 PPA CB Outlet R3 OTM-45 Filter (Combine with Q-1973)	3	3/11/21		250 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1973 PPA CB Outlet R3 OTM-45 FH of Filter Holder & Probe MeOH Rinse (Combine with Q-1972)	3	3/11/21		250 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the Filter extraction.
Q-1974 PPA CB Outlet R3 OTM-45 XAD-2 Resin Tube	3	3/11/21		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. Analyze for HFPO-DA and PFOA.
Q-1975 PPA CB Outlet R3 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with Q-1974)	3	3/11/21		250 mL HDPE Wide-Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
Q-1976 PPA CB Outlet R3 OTM-45 Impingers 1,2 & 3 Condensate	3	3/11/21		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.
Q-1977 PPA CB Outlet R3 OTM-45 Impinger Glassware MeOH Rinse (Combine with Q-1974)	3	3/11/21		250 mL HDPE Wide-Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
Q-1978 PPA CB Outlet R3 OTM-45 Breakthrough XAD-2 Resin Tube	3	3/11/21		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.

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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 0.7/17.4°C
- (3) Record any apparent sample loss/breakage. NONE
- (4) Record any unidentified samples transported with this shipment of samples: NONE
- (5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances): HAND DELIVERED, NO CUSTODY SEALS

Custody Transfer:

Relinquished By:	<u>Patricia May</u> Name	<u>Rumbell</u> Company	<u>3/12/21 1800</u> Date/Time
Accepted By:	<u>Doug Child</u> Name	<u>ETA KNOX</u> Company	<u>3/12/21 1800</u> Date/Time
Relinquished By:	<u>Doug Child</u> Name	<u>ETA KNOX</u> Company	<u>3/13/21 1040</u> Date/Time
Accepted By:	<u>K. W.</u> Name	<u>ETA</u> Company	<u>3/17/21 1810</u> Date/Time
Relinquished By:	_____ Name	_____ Company	_____ Date/Time
Accepted By:	_____ Name	_____ Company	_____ Date/Time
Relinquished By:	_____ Name	_____ Company	_____ Date/Time
Accepted By:	_____ Name	_____ Company	_____ Date/Time

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

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	/			<input type="checkbox"/> Containers, Broken	
2. Were ambient air containers received intact?			/	<input type="checkbox"/> Checked in lab	
3. The coolers/containers custody seal if present, is it intact?			/	<input type="checkbox"/> Yes <input type="checkbox"/> NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6°C, VOST: 10°C) Thermometer ID : <u>SL70</u> Correction factor: <u>-0.3°C</u>	/			<input type="checkbox"/> Cooler Out of Temp, Client Contacted, Proceed/Cancel <input type="checkbox"/> Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?	/			<input type="checkbox"/> Containers, Broken	
6. Were samples received in appropriate containers?	/			<input type="checkbox"/> Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	/			<input type="checkbox"/> COC & Samples Do Not Match <input type="checkbox"/> COC Incorrect/Incomplete <input type="checkbox"/> COC Not Received	
8. Were all of the samples listed on the COC received?	/			<input type="checkbox"/> Sample Received, Not on COC <input type="checkbox"/> Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	/			<input type="checkbox"/> COC; No Date/Time; Client Contacted	Labeling Verified by: _____ Date: _____
10. Was the sampler identified on the COC?	/		/	<input type="checkbox"/> Sampler Not Listed on COC	pH test strip lot number: _____
11. Is the client and project name/# identified?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	/			<input type="checkbox"/> COC No tests on COC	
13. Is the matrix of the samples noted?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	/			<input type="checkbox"/> COC Incorrect/Incomplete	Box 16A: pH Preservation Box 18A: Residual Chlorine
15. Were samples received within holding time?	/			<input type="checkbox"/> Holding Time - Receipt	Preservative: _____
16. Were samples received with correct chemical preservative (excluding Encore)?			/	<input type="checkbox"/> pH Adjusted, pH Included (See box 16A)	Lot Number: _____
17. Were VOA samples received without headspace?			/	<input type="checkbox"/> Incorrect Preservative	Exp Date: _____
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____			/	<input type="checkbox"/> Headspace (VOA only) <input type="checkbox"/> Residual Chlorine	Analyst: _____
19. For 1613B water samples is pH<9?			/		Date: _____
20. For rad samples was sample activity info. Provided?			/	<input type="checkbox"/> If no, notify lab to adjust <input type="checkbox"/> Project missing info	Time: _____
Project #: _____				PM Instructions: _____	

Sample Receiving Associate: Raymond Date: 3-13-21

QA026R32.doc, 062719



QA/QC Laboratory Data

ANALYTICAL REPORT

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

Laboratory Job ID: 140-22287-1
Client Project/Site: PPA Carbon Bed Field QC

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:
4/6/2021 1:21:45 PM

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

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

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

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



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Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.

Glossary

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

Case Narrative

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Job ID: 140-22287-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative 140-22287-1

Receipt

The samples were received on 3/13/2021 10:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6° C.

LCMS

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

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

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

Sample results were calculated using the following equation:

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

Where:

DF = Instrument dilution factor

SF = Extraction Split Factor = (final volume of extract in the initial extraction batch / initial volume of extract in the "Split" batch)

For condensate, if less than the entire sample is extracted, the fraction of sample used replaces "1 sample"

Method 537 (modified): The method blank for preparation batch 140-48003 and 140-48146 contained HFPO-DA above the reporting limit (RL). The entire sample was consumed during analysis or extraction, therefore, the data have been reported.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: (LCS 140-47984/2-B). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1.

Method 537 (modified): The method blank for preparation batch 140-47984 and 140-48079 HFPO-DA above the reporting limit (RL). The entire sample was consumed during analysis or extraction, therefore, the data have been reported.

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: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Client Sample ID: T-1108,1109 QC OTM-45 PPA CB FH BT

Lab Sample ID: 140-22287-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00386	B	0.00100	0.000580	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1110,1111,1113 QC OTM-45 PPA CB BH BT

Lab Sample ID: 140-22287-2

No Detections.

Client Sample ID: T-1112 QC OTM-45 PPA CB IMPINGER 1,2&3 COND BT

Lab Sample ID: 140-22287-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00133	B	0.000500	0.0000825	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1114 QC OTM-45 PPA CB BREAKTHROUGH XAD-2 RESIN TUBE BT

Lab Sample ID: 140-22287-4

No Detections.

Client Sample ID: T-1115 QC OTM-45 PPA CB DI WATER RB

Lab Sample ID: 140-22287-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00121	B	0.000500	0.0000825	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: T-1116 QC OTM-45 PPA CB MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-22287-6

No Detections.

Client Sample ID: T-1117 QC OTM-45 PPA CB COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-22287-7

No Detections.

Client Sample ID: A-7359 MEDIA CHECK XAD

Lab Sample ID: 140-22287-8

No Detections.

Client Sample ID: A-7360 MEDIA CHECK FILTER

Lab Sample ID: 140-22287-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00267	B	0.00100	0.000580	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Client Sample ID: T-1108,1109 QC OTM-45 PPA CB FH BT

Lab Sample ID: 140-22287-1

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00386	B	0.00100	0.000580	ug/Sample		03/22/21 14:10	03/28/21 11:13	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	96		25 - 150				03/22/21 14:10	03/28/21 11:13	1

Client Sample ID: T-1110,1111,1113 QC OTM-45 PPA CB BH BT

Lab Sample ID: 140-22287-2

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		03/23/21 14:37	04/01/21 21:44	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	80		25 - 150				03/23/21 14:37	04/01/21 21:44	1

Client Sample ID: T-1112 QC OTM-45 PPA CB IMPINGER 1,2&3 COND BT

Lab Sample ID: 140-22287-3

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00133	B	0.000500	0.0000825	ug/Sample		03/23/21 05:53	03/27/21 14:23	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	108		25 - 150				03/23/21 05:53	03/27/21 14:23	1

Client Sample ID: T-1114 QC OTM-45 PPA CB BREAKTHROUGH XAD-2 RESIN TUBE BT

Lab Sample ID: 140-22287-4

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		03/23/21 14:37	04/01/21 21:53	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	76		25 - 150				03/23/21 14:37	04/01/21 21:53	1

Client Sample ID: T-1115 QC OTM-45 PPA CB DI WATER RB

Lab Sample ID: 140-22287-5

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00121	B	0.000500	0.0000825	ug/Sample		03/23/21 05:53	03/27/21 14:32	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	111		25 - 150				03/23/21 05:53	03/27/21 14:32	1

Eurofins TestAmerica, Knoxville

Client Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Client Sample ID: T-1116 QC OTM-45 PPA CB MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-22287-6

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		03/23/21 14:37	04/01/21 22:02	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	91		25 - 150				03/23/21 14:37	04/01/21 22:02	1

Client Sample ID: T-1117 QC OTM-45 PPA CB COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-22287-7

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		03/23/21 14:37	04/01/21 22:11	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	87		25 - 150				03/23/21 14:37	04/01/21 22:11	1

Client Sample ID: A-7359 MEDIA CHECK XAD

Lab Sample ID: 140-22287-8

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		03/23/21 14:37	04/01/21 22:37	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	74		25 - 150				03/23/21 14:37	04/01/21 22:37	1

Client Sample ID: A-7360 MEDIA CHECK FILTER

Lab Sample ID: 140-22287-9

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00267	B	0.00100	0.000580	ug/Sample		03/22/21 14:10	03/28/21 11:22	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	83		25 - 150				03/22/21 14:10	03/28/21 11:22	1

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

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)	
140-22287-1	T-1108,1109 QC OTM-45 PPA C	96	
140-22287-2	T-1110,1111,1113 QC OTM-45 PPA CB BH BT	80	
140-22287-3	T-1112 QC OTM-45 PPA CB IMPINGER 1,2&3 COND BT	108	
140-22287-4	T-1114 QC OTM-45 PPA CB BREAKTHROUGH XAD-2 RESI TUBE BT	76	
140-22287-5	T-1115 QC OTM-45 PPA CB DI WATER RB	111	
140-22287-6	T-1116 QC OTM-45 PPA CB MEOH WITH 5% NH4OH RB	91	
140-22287-7	T-1117 QC OTM-45 PPA CB COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PI	87	
140-22287-8	A-7359 MEDIA CHECK XAD	74	
140-22287-9	A-7360 MEDIA CHECK FILTER	83	
LCS 140-47984/2-B	Lab Control Sample	32	
LCS 140-48003/2-B	Lab Control Sample	112	
LCS 140-48051/2-B	Lab Control Sample	76	
LCSD 140-47984/3-B	Lab Control Sample Dup	96	
LCSD 140-48003/3-B	Lab Control Sample Dup	107	
LCSD 140-48051/3-B	Lab Control Sample Dup	78	
MB 140-47984/14-B	Method Blank	76	
MB 140-47984/1-B	Method Blank	92	
MB 140-48003/14-B	Method Blank	102	
MB 140-48003/1-B	Method Blank	112	
MB 140-48051/1-B	Method Blank	93	

Surrogate Legend

HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-47984/14-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47984

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.002612		0.00100	0.000580	ug/Sample		03/22/21 14:10	03/28/21 03:40	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	76		25 - 150				03/22/21 14:10	03/28/21 03:40	1

Lab Sample ID: MB 140-47984/1-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47984

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.002562		0.00100	0.000580	ug/Sample		03/22/21 14:10	03/28/21 01:28	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		25 - 150				03/22/21 14:10	03/28/21 01:28	1

Lab Sample ID: LCS 140-47984/2-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47984

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.02413		ug/Sample		121	60 - 140
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits				
13C3 HFPO-DA	32		25 - 150				

Lab Sample ID: LCSD 140-47984/3-B
Matrix: Air
Analysis Batch: 48219

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 47984

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
HFPO-DA	0.0200	0.02295		ug/Sample		115	60 - 140	5	30
Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits						
13C3 HFPO-DA	96		25 - 150						

Lab Sample ID: MB 140-48003/14-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 48003

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001372		0.000500	0.0000825	ug/Sample		03/23/21 05:53	03/27/21 13:57	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	102		25 - 150				03/23/21 05:53	03/27/21 13:57	1

QC Sample Results

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

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

Lab Sample ID: MB 140-48003/1-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 48003

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001514		0.000500	0.0000825	ug/Sample		03/23/21 05:53	03/27/21 11:45	1
Isotope Dilution	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C3 HFPO-DA	112		25 - 150				03/23/21 05:53	03/27/21 11:45	1

Lab Sample ID: LCS 140-48003/2-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 48003

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0100	0.01114		ug/Sample		111	60 - 140
Isotope Dilution	%Recovery	LCS Qualifier	Limits				
¹³ C3 HFPO-DA	112		25 - 150				

Lab Sample ID: LCSD 140-48003/3-B
Matrix: Air
Analysis Batch: 48210

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 48003

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA	0.0100	0.01177		ug/Sample		118	60 - 140	6	30
Isotope Dilution	%Recovery	LCSD Qualifier	Limits						
¹³ C3 HFPO-DA	107		25 - 150						

Lab Sample ID: MB 140-48051/1-B
Matrix: Air
Analysis Batch: 48419

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 48051

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		03/23/21 14:37	04/01/21 21:18	1
Isotope Dilution	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C3 HFPO-DA	93		25 - 150				03/23/21 14:37	04/01/21 21:18	1

Lab Sample ID: LCS 140-48051/2-B
Matrix: Air
Analysis Batch: 48419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 48051

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA	0.0200	0.02171		ug/Sample		109	60 - 140
Isotope Dilution	%Recovery	LCS Qualifier	Limits				
¹³ C3 HFPO-DA	76		25 - 150				

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

LCMS

Prep Batch: 47984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22287-1	T-1108,1109 QC OTM-45 PPA CB FH BT	Total/NA	Air	None	
140-22287-9	A-7360 MEDIA CHECK FILTER	Total/NA	Air	None	
MB 140-47984/14-B	Method Blank	Total/NA	Air	None	
MB 140-47984/1-B	Method Blank	Total/NA	Air	None	
LCS 140-47984/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-47984/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 48003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22287-3	T-1112 QC OTM-45 PPA CB IMPINGER 1,2&3 C	Total/NA	Air	None	
140-22287-5	T-1115 QC OTM-45 PPA CB DI WATER RB	Total/NA	Air	None	
MB 140-48003/14-B	Method Blank	Total/NA	Air	None	
MB 140-48003/1-B	Method Blank	Total/NA	Air	None	
LCS 140-48003/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-48003/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 48051

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22287-2	T-1110,1111,1113 QC OTM-45 PPA CB BH BT	Total/NA	Air	None	
140-22287-4	T-1114 QC OTM-45 PPA CB BREAKTHROUGH)	Total/NA	Air	None	
140-22287-6	T-1116 QC OTM-45 PPA CB MEOH WITH 5% NH	Total/NA	Air	None	
140-22287-7	T-1117 QC OTM-45 PPA CB COMBINED GLASS	Total/NA	Air	None	
140-22287-8	A-7359 MEDIA CHECK XAD	Total/NA	Air	None	
MB 140-48051/1-B	Method Blank	Total/NA	Air	None	
LCS 140-48051/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-48051/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 48079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22287-1	T-1108,1109 QC OTM-45 PPA CB FH BT	Total/NA	Air	Split	47984
140-22287-9	A-7360 MEDIA CHECK FILTER	Total/NA	Air	Split	47984
MB 140-47984/14-B	Method Blank	Total/NA	Air	Split	47984
MB 140-47984/1-B	Method Blank	Total/NA	Air	Split	47984
LCS 140-47984/2-B	Lab Control Sample	Total/NA	Air	Split	47984
LCSD 140-47984/3-B	Lab Control Sample Dup	Total/NA	Air	Split	47984

Cleanup Batch: 48146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22287-3	T-1112 QC OTM-45 PPA CB IMPINGER 1,2&3 C	Total/NA	Air	Split	48003
140-22287-5	T-1115 QC OTM-45 PPA CB DI WATER RB	Total/NA	Air	Split	48003
MB 140-48003/14-B	Method Blank	Total/NA	Air	Split	48003
MB 140-48003/1-B	Method Blank	Total/NA	Air	Split	48003
LCS 140-48003/2-B	Lab Control Sample	Total/NA	Air	Split	48003
LCSD 140-48003/3-B	Lab Control Sample Dup	Total/NA	Air	Split	48003

Analysis Batch: 48210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22287-3	T-1112 QC OTM-45 PPA CB IMPINGER 1,2&3 C	Total/NA	Air	537 (modified)	48146
140-22287-5	T-1115 QC OTM-45 PPA CB DI WATER RB	Total/NA	Air	537 (modified)	48146
MB 140-48003/14-B	Method Blank	Total/NA	Air	537 (modified)	48146
MB 140-48003/1-B	Method Blank	Total/NA	Air	537 (modified)	48146

QC Association Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

LCMS (Continued)

Analysis Batch: 48210 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 140-48003/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	48146
LCSD 140-48003/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	48146

Analysis Batch: 48219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-47984/14-B	Method Blank	Total/NA	Air	537 (modified)	48079
MB 140-47984/1-B	Method Blank	Total/NA	Air	537 (modified)	48079
LCS 140-47984/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	48079
LCSD 140-47984/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	48079

Analysis Batch: 48223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22287-1	T-1108,1109 QC OTM-45 PPA CB FH BT	Total/NA	Air	537 (modified)	48079
140-22287-9	A-7360 MEDIA CHECK FILTER	Total/NA	Air	537 (modified)	48079

Cleanup Batch: 48224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22287-2	T-1110,1111,1113 QC OTM-45 PPA CB BH BT	Total/NA	Air	Split	48051
140-22287-4	T-1114 QC OTM-45 PPA CB BREAKTHROUGH)	Total/NA	Air	Split	48051
140-22287-6	T-1116 QC OTM-45 PPA CB MEOH WITH 5% NF	Total/NA	Air	Split	48051
140-22287-7	T-1117 QC OTM-45 PPA CB COMBINED GLASS	Total/NA	Air	Split	48051
140-22287-8	A-7359 MEDIA CHECK XAD	Total/NA	Air	Split	48051
MB 140-48051/1-B	Method Blank	Total/NA	Air	Split	48051
LCS 140-48051/2-B	Lab Control Sample	Total/NA	Air	Split	48051
LCSD 140-48051/3-B	Lab Control Sample Dup	Total/NA	Air	Split	48051

Analysis Batch: 48419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22287-2	T-1110,1111,1113 QC OTM-45 PPA CB BH BT	Total/NA	Air	537 (modified)	48224
140-22287-4	T-1114 QC OTM-45 PPA CB BREAKTHROUGH)	Total/NA	Air	537 (modified)	48224
140-22287-6	T-1116 QC OTM-45 PPA CB MEOH WITH 5% NF	Total/NA	Air	537 (modified)	48224
140-22287-7	T-1117 QC OTM-45 PPA CB COMBINED GLASS	Total/NA	Air	537 (modified)	48224
140-22287-8	A-7359 MEDIA CHECK XAD	Total/NA	Air	537 (modified)	48224
MB 140-48051/1-B	Method Blank	Total/NA	Air	537 (modified)	48224
LCS 140-48051/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	48224
LCSD 140-48051/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	48224

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Client Sample ID: T-1108,1109 QC OTM-45 PPA CB FH BT

Lab Sample ID: 140-22287-1

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48223	03/28/21 11:13	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: T-1110,1111,1113 QC OTM-45 PPA CB BH BT

Lab Sample ID: 140-22287-2

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	48051	03/23/21 14:37	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	48224	03/28/21 10:17	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48419	04/01/21 21:44	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: T-1112 QC OTM-45 PPA CB IMPINGER 1,2&3 COND BT

Lab Sample ID: 140-22287-3

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 14:23	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: T-1114 QC OTM-45 PPA CB BREAKTHROUGH XAD-2 RESIN TUBE BT

Lab Sample ID: 140-22287-4

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	48051	03/23/21 14:37	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	48224	03/28/21 10:17	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48419	04/01/21 21:53	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: T-1115 QC OTM-45 PPA CB DI WATER RB

Lab Sample ID: 140-22287-5

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	48003	03/23/21 05:53	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48210	03/27/21 14:32	JRC	TAL KNX
Instrument ID: LCA										

Lab Chronicle

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Client Sample ID: T-1116 QC OTM-45 PPA CB MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-22287-6

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	48051	03/23/21 14:37	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	48224	03/28/21 10:17	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48419	04/01/21 22:02	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: T-1117 QC OTM-45 PPA CB COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-22287-7

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	48051	03/23/21 14:37	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	48224	03/28/21 10:17	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48419	04/01/21 22:11	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: A-7359 MEDIA CHECK XAD

Lab Sample ID: 140-22287-8

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	48051	03/23/21 14:37	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	48224	03/28/21 10:17	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48419	04/01/21 22:37	JRC	TAL KNX
Instrument ID: LCA										

Client Sample ID: A-7360 MEDIA CHECK FILTER

Lab Sample ID: 140-22287-9

Date Collected: 03/09/21 00:00

Matrix: Air

Date Received: 03/13/21 10:40

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	47984	03/22/21 14:10	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	48079	03/24/21 09:23	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			48223	03/28/21 11:22	JRC	TAL KNX
Instrument ID: LCA										

Laboratory References:

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

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
 Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-22
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	10-31-21
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-31-22
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-22
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-22
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-01-22
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	01-02-22
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

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

Protocol References:

- EPA = US Environmental Protection Agency
- None = None
- TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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



Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: PPA Carbon Bed Field QC

Job ID: 140-22287-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-22287-1	T-1108,1109 QC OTM-45 PPA CB FH BT	Air	03/09/21 00:00	03/13/21 10:40	
140-22287-2	T-1110,1111,1113 QC OTM-45 PPA CB BH BT	Air	03/09/21 00:00	03/13/21 10:40	
140-22287-3	T-1112 QC OTM-45 PPA CB IMPINGER 1,2&3 COND BT	Air	03/09/21 00:00	03/13/21 10:40	
140-22287-4	T-1114 QC OTM-45 PPA CB BREAKTHROUGH XAD-2 RESIN TUBE BT	Air	03/09/21 00:00	03/13/21 10:40	
140-22287-5	T-1115 QC OTM-45 PPA CB DI WATER RB	Air	03/09/21 00:00	03/13/21 10:40	
140-22287-6	T-1116 QC OTM-45 PPA CB MEOH WITH 5% NH4OH RB	Air	03/09/21 00:00	03/13/21 10:40	
140-22287-7	T-1117 QC OTM-45 PPA CB COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	Air	03/09/21 00:00	03/13/21 10:40	
140-22287-8	A-7359 MEDIA CHECK XAD	Air	03/09/21 00:00	03/13/21 10:40	
140-22287-9	A-7360 MEDIA CHECK FILTER	Air	03/09/21 00:00	03/13/21 10:40	

Request for Analysis/Chain-of-Custody – RFA/COC #007
The Chemours Company – Fayetteville NC
PPA Carbon Bed Field QC Samples

Project Identification:		Chemours Emissions Test		Laboratory Deliverable Turnaround Requirements:	
Client Name:	The Chemours Company FC, LLC		Analytical Due Date:	21 Days from Lab Receipt	
Client Contact:	Christel Compton Office: (910) 678-1213 Cell: (910) 975-3386		(Review-Released Data)		
TestAmerica Project Manager:	Courtney Adkins Office: (865) 291-3019		Data Package Due Date:	28 Days from Lab Receipt	
TestAmerica Program Manager:	Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004				
Analytical Testing QC Requirements:			Laboratory Destination:		
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			Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921		
Project Deliverables:			Lab Phone Number:		
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.			865.291.3000		
Analytical Parameter:			Holding Time Requirements:		Preservation Requirements:
HFPO-DA (CAS No. 13252-13-6) & PFOA (CAS No. 335-67-1)			14 Days to Extraction; 40 Days to Analysis		Cool, 4°C
Courier: Hand Deliver					

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
T-1108 QC OTM-45 PPA CB Filter BT (Combine with T-1109)	QC	3/9/21	Blank Train	250 mL HDPE Wide-Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Blank Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample. Analyze for HFPO-DA and PFOA.
T-1109 QC OTM-45 PPA CB FH of Filter Holder & Probe MeOH Rinse BT (Combine with T-1108)	QC	3/9/21	Blank Train	250 mL HDPE Wide-Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse OTM-45 Blank Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the Filter extraction.



140-22287 Chain of Custody

Request for Analysis/Chain-of-Custody – RFA/COC #007
 The Chemours Company – Fayetteville NC
 PPA Carbon Bed Field QC Samples

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
T-1110 QC OTM-45 PPA CB XAD-2 Resin Tube BT	QC	3/9/21	Blank Train	XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Blank Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. Analyze for HFPO-DA and PFOA.
T-1111 QC OTM-45 PPA CB BH of Filter Holder & Coil Condenser MeOH Rinse BT (Combine with T-1110)	QC	3/9/21	Blank Train	250 mL HDPE Wide- Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse OTM-45 Blank Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Analyze for HFPO-DA and PFOA.
T-1112 QC OTM-45 PPA CB Impingers 1,2 & 3 Condensate BT	QC	3/9/21	Blank Train	1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Blank Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.
T-1113 QC OTM-45 PPA CB Impinger Glassware MeOH Rinse BT (Combine with T-1110)	QC	3/9/21	Blank Train	250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse OTM-45 Blank Train HFPO-DA & PFOA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
T-1114 QC OTM-45 PPA CB Breakthrough XAD- 2 Resin Tube BT	QC	3/9/21	Blank Train	XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Blank Train HFPO-DA & PFOA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Analyze for HFPO-DA and PFOA.

Request for Analysis/Chain-of-Custody – RFA/COC #007
 The Chemours Company – Fayetteville NC
 PPA Carbon Bed Field QC Samples

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
T-1115 QC OTM-45 PPA CB DI Water RB	QC	3/9/21	Reagent Blank	250 mL HDPE Wide- Mouth Bottle	Deionized (DI) Water Reagent Blank OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.
T-1116 QC OTM-45 PPA CB MeOH with 5% NH ₄ OH RB	QC	3/9/21	Reagent Blank	250 mL HDPE Wide- Mouth Bottle	Methanol with 5% NH₄OH Reagent Blank OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.
T-1117 QC OTM-45 PPA CB Combined Glassware Rinses (MeOH/5% NH ₄ OH) PB	QC	3/9/21	Proof Blank	250 mL HDPE Wide- Mouth Bottle	Front Half, Back Half and Impinger Glassware Rinses Proof Blank Composite OTM-45 Train HFPO-DA & PFOA Analysis	Knoxville: Analyze for HFPO-DA and PFOA.

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Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:

Comments

(Please write "NONE" if no comment applicable)

- (1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment. NONE
- (2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA: RT 1.9 / CT 1.6°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:

Relinquished By:	<u>Patricia Gray</u>	<u>Painball</u>	<u>3/12/21 / 1800</u>
	Name	Company	Date/Time
Accepted By:	<u>Doug Child</u>	<u>ETA KNOX</u>	<u>3/12/21 1800</u>
	Name	Company	Date/Time
Relinquished By:	<u>Doug Child</u>	<u>ETA KNOX</u>	<u>3/13/21 1048</u>
	Name	Company	Date/Time
Accepted By:	<u>Kevin</u>	<u>ETA</u>	<u>3/13/21 1040</u>
	Name	Company	Date/Time
Relinquished By:			
	Name	Company	Date/Time
Accepted By:			
	Name	Company	Date/Time
Relinquished By:			
	Name	Company	Date/Time
Accepted By:			
	Name	Company	Date/Time

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

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	<input checked="" type="checkbox"/>			<input type="checkbox"/> Containers, Broken	
2. Were ambient air containers received intact?		<input checked="" type="checkbox"/>		<input type="checkbox"/> Checked in lab	
3. The coolers/containers custody seal if present, is it intact?		<input checked="" type="checkbox"/>		<input type="checkbox"/> Yes <input type="checkbox"/> NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6°C, VOST: 10°C) Thermometer ID : <u>5670</u> Correction factor: <u>-0.3°C</u>	<input checked="" type="checkbox"/>			<input type="checkbox"/> Cooler Out of Temp, Client Contacted, Proceed/Cancel <input type="checkbox"/> Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?	<input checked="" type="checkbox"/>			<input type="checkbox"/> Containers, Broken	
6. Were samples received in appropriate containers?	<input checked="" type="checkbox"/>			<input type="checkbox"/> Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	<input checked="" type="checkbox"/>			<input type="checkbox"/> COC & Samples Do Not Match <input type="checkbox"/> COC Incorrect/Incomplete <input type="checkbox"/> COC Not Received	
8. Were all of the samples listed on the COC received?	<input checked="" type="checkbox"/>			<input type="checkbox"/> Sample Received, Not on COC <input type="checkbox"/> Sample on COC, Not Received <input type="checkbox"/> COC; No Date/Time; Client Contacted	
9. Is the date/time of sample collection noted?	<input checked="" type="checkbox"/>			<input type="checkbox"/> Sampler Not Listed on COC	
10. Was the sampler identified on the COC?	<input checked="" type="checkbox"/>			<input type="checkbox"/> COC Incorrect/Incomplete	
11. Is the client and project name/# identified?	<input checked="" type="checkbox"/>			<input type="checkbox"/> COC No tests on COC	
12. Are tests/parameters listed for each sample?	<input checked="" type="checkbox"/>			<input type="checkbox"/> COC Incorrect/Incomplete	
13. Is the matrix of the samples noted?	<input checked="" type="checkbox"/>			<input type="checkbox"/> COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	<input checked="" type="checkbox"/>			<input type="checkbox"/> COC Incorrect/Incomplete	
15. Were samples received within holding time?	<input checked="" type="checkbox"/>			<input type="checkbox"/> Holding Time - Receipt	
16. Were samples received with correct chemical preservative (excluding Encore)?			<input checked="" type="checkbox"/>	<input type="checkbox"/> pH Adjusted, pH Included (See box 16A) <input type="checkbox"/> Incorrect Preservative	
17. Were VOA samples received without headspace?			<input checked="" type="checkbox"/>	<input type="checkbox"/> Headspace (VOA only) <input type="checkbox"/> Residual Chlorine	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____			<input checked="" type="checkbox"/>		
19. For 1613B water samples is pH<9?			<input checked="" type="checkbox"/>	<input type="checkbox"/> If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?			<input checked="" type="checkbox"/>	<input type="checkbox"/> Project missing info	
Project #: _____ PM Instructions: _____					
Sample Receiving Associate: <u>Peggy Danner</u> Date: <u>3-13-21</u>					

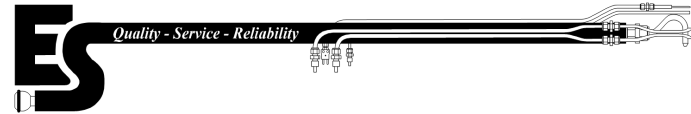
Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative: _____	
Lot Number: _____	
Exp Date: _____	
Analyst: _____	
Date: _____	
Time: _____	



APPENDIX E EQUIPMENT CALIBRATION DATA

Pretest Equipment Calibration Data

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



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

DATE: METER SERIAL #: BAROMETRIC PRESSURE (in Hg): INITIAL FINAL AVG (P_{bar})

METER PART #: CRITICAL ORIFICE SET SERIAL #:

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)			TEMPERATURES °F					ELAPSED TIME (MIN) θ	DGM ΔH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	ΔH _@			
				INITIAL	FINAL	NET (V _m)	AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL									DGM AVG		
11	1	0.306				.0					0											
	2	0.306	23	297.964	306.208	8.244	78	77	78	76	77	20.00	0.43	8.1511	7.9310	0.973			1.52			
	3	0.306				.0					0											
														AVG =		0.973	0.74	1.23				
16	1	0.4268				.0					0											
	2	0.4268	22	306.212	312.009	5.797	79	78	79	77	78	10.00	0.84	5.7267	5.5259	0.965			1.53			
	3	0.4268				.0					0											
														AVG =		0.965	-0.10	0.39				
18	1	0.4961				.0					0											
	2	0.4961	21	312.016	319.456	7.440	80	79	80	78	78	11.00	1.1	7.3442	7.0589	0.961			1.48			
	3	0.4961				.0					0											
														AVG =		0.961	-0.49	-0.20				
26	1	0.7131				.0					0											
	2	0.7131	18	319.485	329.159	9.674	81	79	82	78	79	10.00	2.5	9.5688	9.2155	0.963			1.64			
	3	0.7131				.0					0											
														AVG =		0.963	-0.29	0.20				
31	1	0.8358				.0					0											
	2	0.8358	17	329.170	340.453	11.283	82	81	84	79	79	10.00	3.4	11.1588	10.7912	0.967			1.62			
	3	0.8358				.0					0											
														AVG =		0.967	0.13	0.62				

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 =

AVERAGE ΔH_@ =

(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
 K₁ = 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

$$\Delta H_{@} = \left(\frac{0.75 \theta}{V_{cr}(std)} \right)^2 \Delta H \left(\frac{V_m(std)}{V_m} \right)$$

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



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

DATE: 1/12/2021 METER SERIAL #: MB10 BAROMETRIC PRESSURE (in Hg): INITIAL 29.83 FINAL 29.83 AVG (P_{bar}) 29.83
 METER PART #: CRITICAL ORIFICE SET SERIAL #: 1393

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)			TEMPERATURES °F				ELAPSED TIME (MIN) q	DGM DH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	DH _⊕
				INITIAL	FINAL	NET (V _m)	AMBIENT	DGM INLET	DGM OUTLET	DGM AVG								
				INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL								
11	1	0.306																
	2	0.306	23	259.927	267.844	7.917	67	71	70	71	70	70.5	19.50	0.45	7.8662	7.7559	0.986	1.59
	3	0.306																
AVG = 0.986																0.28	0.29	
16	1	0.4268																
	2	0.4268	22.5	267.844	273.473	5.629	66	70	70	71	70	70.25	10.00	0.89	5.6015	5.5528	0.991	1.62
	3	0.4268																
AVG = 0.991																0.82	0.83	
18	1	0.4961	21															
	2	0.4961		198.213	204.754	6.541	66	66	67	66	66	66.25	10.00	1.3	6.5652	6.4544	0.983	1.76
	3	0.4961																
AVG = 0.983																-0.01	0.36	
26	1	0.7131																
	2	0.7131	19	221.925	231.311	9.386	75	70	72	68	69	69.75	10.00	2.7	9.3907	9.1993	0.980	1.80
	3	0.7131																
AVG = 0.980																-0.36	0.38	
31	1	0.8358																
	2	0.8358	18	280.055	291.180	11.125	66	70	72	70	70	70.5	10.00	3.7	11.1420	10.8740	0.976	1.76
	3	0.8358																
AVG = 0.976																-0.74	-0.37	

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 = 0.983

AVERAGE DH_⊕ = 1.71

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

(2) $V_{cr(std)} = K' * \frac{Pbar * \Theta}{\sqrt{T_{amb}}}$ = Volume of gas sample passed through the critical orifice, corrected to standard conditions
 T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
 K' = Average K' factor from Critical Orifice Calibration

(3) $Y = \frac{V_{cr(std)}}{V_{m(std)}}$ = DGM calibration factor

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

Initial Sample Probe Calibration Form

 Probe ID P4-1/TC-7C

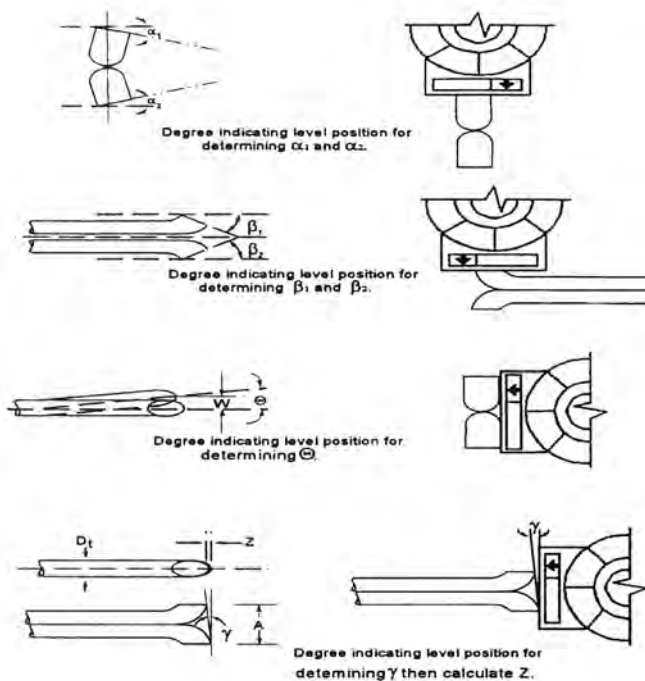
 Date 01/28/21

 Technician S. Waters

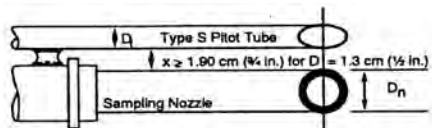
"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 (-10° = α_1 = + 10°)	1
α_2 (-10° = α_2 = + 10°)	0
β_1 (-5° = β_1 = + 5°)	1
β_2 (-5° = β_2 = + 5°)	1
γ	1
θ	0
$z = A \tan \gamma$ (< 0.125")	0.011
$W = A \tan \theta$ (< 0.03125")	0.0000
D_t (3/16 = D_t = 3/8")	0.252
A	0.655
$A/2D_t$ (1.05 = P_A/D_t = 1.5)	1.300

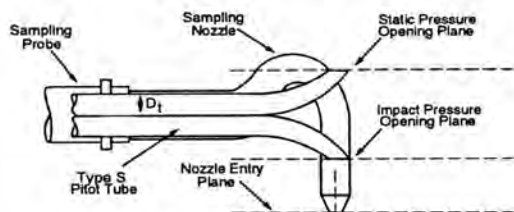
Source: Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III, Stationary Source-Specific Methods. EPA/600/R-94/038c, September 30, 1994



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



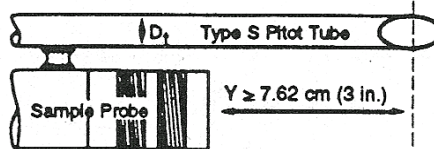
A. Bottom View; showing minimum pitot tube-nozzle separation.



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

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	492	492	526	526	526	672	672	672
Thermocouple Temp	492	492	492	525	525	525	672	672	672
Difference (%)	0.0	0.0	0.0	-0.2	-0.2	-0.2	0.0	0.0	0.0

Temperature values must be within 1.5% of reference temperature

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

Certified By: S. Waters

Date: 01/28/21

Initial Sample Probe Calibration Form

 Probe ID P4-2/TC-5D

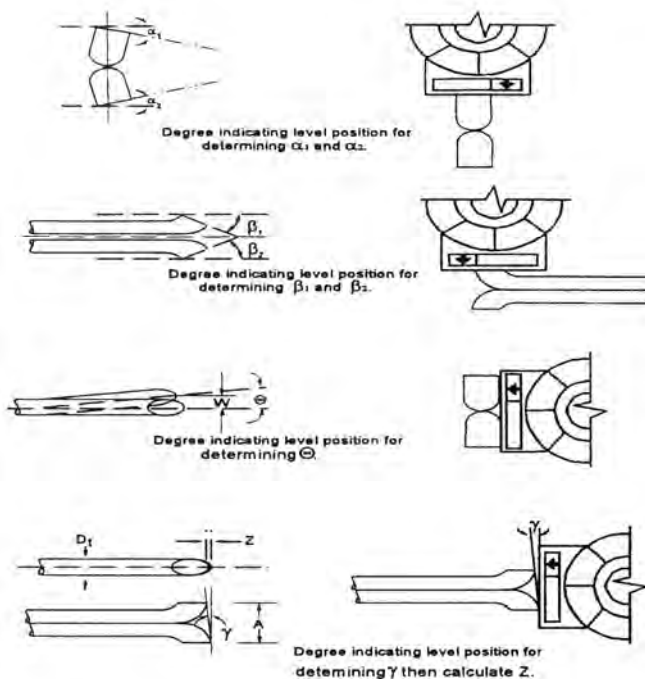
 Date 06/16/20

 Technician P. Grady

"S" Type Pitot Calibration

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

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



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

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

Does X Exceed 0.75 inches? Yes

Does Y Exceed 3 inches? NA

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

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

Thermocouple Calibration

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

Temperature values must be within 1.5% of reference temperature

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

 Certified By: P. Grady

 Date: 06/16/20

Post Test Equipment Calibration Data

POST TEST DRY GAS METER CALIBRATION

DATE: 03/17/21 METER BOX #: 8 BAROMETRIC PRESSURE (in Hg): 30.13 30.13 30.13
 TECHNICIAN: S. Waters CRITICAL ORIFICE SET SERIAL #: 1393

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)			TEMPERATURES °F					ELAPSED TIME (MIN) q	DGM DH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	Y % Diff to Average Y	DH _g	
				INITIAL	FINAL	NET (V _m)	AMBIENT	DGM INLET		DGM OUTLET									DGM AVG
								INITIAL	FINAL	INITIAL	FINAL								
	1																		
	2																		
	3																		
18	1	0.4961	22	782.817	789.520	6.703	65	69	69	69	69	69	10.00	1.1	6.7566	6.5255	0.966	-0.10	1.46
	2	0.4961	22	789.520	796.215	6.695	65	69	68	69	69	68.75	10.00	1.1	6.7518	6.5255	0.966	-0.03	1.47
	3	0.4961	22	796.215	802.896	6.681	65	68	68	69	69	68.5	10.00	1.1	6.7408	6.5255	0.968	0.13	1.47
	1																		
	2																		
	3																		

AVG =

6.7566 6.5255 0.966 -0.10 1.46
6.7518 6.5255 0.966 -0.03 1.47
6.7408 6.5255 0.968 0.13 1.47

AVG = 0.967

AVG =

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.967

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

PERCENT DIFFERENCE = -0.8

Procedure:

- 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 readings in outlined boxes below, other columns are automatically calculated.

POST TEST DRY GAS METER CALIBRATION

DATE: 03/17/21 METER BOX #: 10 BAROMETRIC PRESSURE (in Hg): 30.05 30.05 AVG (P_{bar}) 30.05
 TECHNICIAN: S. Milo CRITICAL ORIFICE SET SERIAL #: 1393

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)					TEMPERATURES °F					ELAPSED TIME (MIN) q	DGM DH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	Y % Diff to Average Y	DH _g	
				DGM READINGS (FT ³)			DGM INLET		DGM OUTLET		DGM AVG	DGM INLET	DGM OUTLET								DGM AVG
				INITIAL	FINAL	NET (V _m)	INITIAL	FINAL	INITIAL	FINAL											
	1																				
	2																				
	3																				
AVG =																					
26	1	0.7131	19	796.328	805.802	9.474	67	68	69	68	68	68.25	10.00	2.7	9.5753	9.3372	0.975	0.04	1.76		
	2	0.7131	19	805.802	815.296	9.494	68	69	70	69	69	69.25	10.00	2.7	9.5774	9.3284	0.974	-0.08	1.76		
	3	0.7131	19	815.296	824.793	9.497	68	70	71	69	70	70	10.00	2.7	9.5668	9.3284	0.975	0.03	1.76		
AVG = 0.975																					
	1																				
	2																				
	3																				
AVG =																					

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.975

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 0.983

PERCENT DIFFERENCE = -0.8