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Report

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# SOURCE EMISSIONS TESTING OF THE POLYMER PROCESS AID CARBON BED

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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.

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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<sup>®</sup> 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  $(O_2)$  and carbon dioxide  $(CO_2)$  were evaluated at both locations in accordance with modified USEPA RM 3 procedures using a Fyrite<sup>®</sup> combustion analyzer. A grab sample was collected and introduced into the Fyrite<sup>®</sup> for  $O_2$  and  $CO_2$  analysis.

# 4.5 Moisture Content

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

# 4.6 HFPO-DA Emissions

HFPO-DA emissions were evaluated in accordance with a modified USEPA Method 0010. The sample train consisted of a 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. H<sub>2</sub>0.
- 3. Bake glassware (with the exception of probe liners) at 450°C for approximately 2 hours, (XAD-2 resin tube glassware will be cleaned by Eurofins/TestAmerica by this same procedure).
- 4. Solvent rinse three (3) times all glassware, brushes, and ancillary tools with the following sequence of solvents: acetone, methylene chloride, hexane, and methanol.
- 5. Clean glassware and tools will be sealed in plastic bags or aluminum foil for transport to the sampling site.
- 6. Squirt bottles will be new dedicated bottles of known history and dedicated to the D.I. Water and methanol/ammonium hydroxide (MeOH/ 5% NH<sub>4</sub>OH) solvent contents. Squirt bottles will be labelled with the solvent content it contains.

# 4.6.2 HFPO-DA Sample Train Recovery

Following completion of each test run, the sample probe, nozzle and front-half of the filter holder were brushed and rinsed three times each with the MeOH/ 5% NH<sub>4</sub>OH solution (Container #1). The glass fiber filter was removed from its housing and transferred to a polyethylene bottle (Container #2). Any particulate matter and filter fibers which adhered to the filter holder and gasket were also placed in Container #2. The XAD-2 resin trap was sealed, labelled and placed in an iced sample cooler. The back-half of the filter holder, coil condenser condensate trap and connecting glassware were rinsed with the same MeOH/ 5% NH<sub>4</sub>OH solution and placed in Container #3.

The volume of water collected in the second and third impingers was measured for moisture determinations and then placed in Container #4. Impingers #2 and #3 were then rinsed with the MeOH/ 5% NH<sub>4</sub>OH solution and placed in Container #5. The second (breakthrough) XAD-2 resin trap was sealed, labelled and placed in an iced sample cooler. The second condensate trap was rinsed with the MeOH/ 5% NH<sub>4</sub>OH 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 9.94E-02 mg/dscm to 1.19E-01 mg/dscm and averaged 1.10E-01 mg/dscm. Corresponding mass emissions of HFPO-DA ranged from 5.07E-03 lb/hr to 6.08E-03 lb/hr and averaged 5.67E-03 lb/hr.

Concentrations of HFPO-DA at the carbon bed outlet ranged from 2.02E-03 mg/dscm to 4.13E-02 mg/dscm and averaged 3.06E-03 mg/dscm. Mass emission rates of HFPO-DA from the carbon bed outlet ranged from 8.10E-05 lb/hr to 1.68E-04 lb/hr and averaged 1.23E-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 ±2°F; DGM ±5.4°F; stack ±1.5 percent of stack temperature.
- Dry gas meters (QA Handbook Section 3.4.2, pp. 1-12) Dry gas meters are calibrated using critical orifices. The procedure entails four runs using four separate critical orifices running at an actual vacuum 1-2 in. greater than the theoretical critical vacuum. The minimum sample volume required per orifice is 5 ft<sup>3</sup>. Meter boxes are calibrated annually and then verified by use of the alternative USEPA RM 5 post-test calibration procedure. This procedure is referenced as Approved Alternate Method ALT-009 (June 21, 1994) by USEPA's Emission Measurement Center. The average Y-value obtained by this method must be within 5% of the initial Y-value.

# 6.2 Equipment Leak Checks

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

# 6.3 Reagent Blanks and Field Blanks

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

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

Additionally, a proof blank train rinse sample was collected one time during the sampling campaign. The glassware components of the train received a thorough solvent rinse after samples were recovered and put away for a sampling run. This secondary rinse was used to prove that the sampling breakdown collection processes capture all HFPO-DA material, and generally leave none of the target analytes uncaptured on the sample glassware. All sampling train glassware parts, including brushes and other tools used, were thoroughly rinsed with MeOH / 5% NH<sub>4</sub>OH solution to evaluate the general rinsing efficiency of the sampling train recovery process.

Reagent blanks of the  $diH_2O$  used in the sample trains and MeOH/5%  $NH_4OH$  solution used for sample recovery were also submitted to the laboratory for analysis along with the field samples. Note that the field blank train and proof blank 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>C</u>	arbon Bed Inl	<u>et</u>		<u>C</u> a	arbon Bed Out	<u>let</u>	
Run Date Start/Stop Time	11Mar21 0919-1107	11Mar21 1137-1322	11Mar21 1343-1527		11Mar21 0919-1107	11Mar21 1137-1322	11Mar21 1343-1527	
Exhaust Gas Conditions Temperature (deg. F) Moisture (volume %) Oxygen (dry volume %) Carbon Dioxide (dry volume %)	73 1.1 20.9 0.0	76 1.2 20.9 0.0	79 1.1 20.9 0.0	76 1.1 20.9 0.0	82 1.2 20.9 0.0	83 1.1 20.9 0.0	84 1.1 20.9 0.0	83 1.1 20.9 0.0
Volumetric Flow Rate acfm dscfm	13,690 13,622	14,098 13,914	13,827 13,599	13,872 13,712	10,936 10,780	10,921 10,745	10,908 10,714	10,922 10,747
<u>HFPO - Dimer Acid</u> mg/dscm lb/hr	1.19E-01 6.08E-03	1.13E-01 5.88E-03	9.94E-02 5.07E-03	1.10E-01 5.67E-03	4.17E-03 1.68E-04	2.98E-03 1.20E-04	2.02E-03 8.10E-05	3.06E-03 1.23E-04
Carbon Bed Removal Efficiency percent	97	98	98	98				

# APPENDIX A PROCESS OPERATING DATA

Date	3/11/2021																											
Time		90	0			10	100			11	100			12	200			13	300			14	100			1	500	
Stack Testin	g				RUN1: 0	919-1107					RUN 2 1137-1322					1	RUN3: 1343-1527				527							
A/F column	Feed Rate (p																											
903 Distillat	ion (pounds																											
DAF ISO Ver	nting																											
Charging wa	ater to Hyd -	venting																										
Charging Su	lfuric acid - v	venting																										
Hydrolysis -	Wash Tank p	oressure Tra	nsfer to Hy	drolysis							Х	Х				Х	Х	Х						Х				
Hydrolysis -	Phase Settle			Х	Х	Х																						
Vap heels p	ressure trans	fer																Х										
Vap cycle		Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х	Х	Х		Х	Х							
Rec Tk to 90	3 Fd Tk Pres	s Xfer (adde	d to process	4/2020)																			Х	Х	Х	Х		
Venting afte	er press tran	from North,	South Acid	tank to Hyd													Х							Х				
DAF tran to	Hyd - ventin	Х	Х																									
Hydrolysis -							·				Х					Х												
Wash Tk to			fer (new 8-2	2019)																								
Scrubber Re	circulation F		,			38								3	8	,							38					
Scrubber dp (inwc) -0.7 -0.5 -0.5																												

# APPENDIX B SCHEMATICS OF THE TEST LOCATIONS

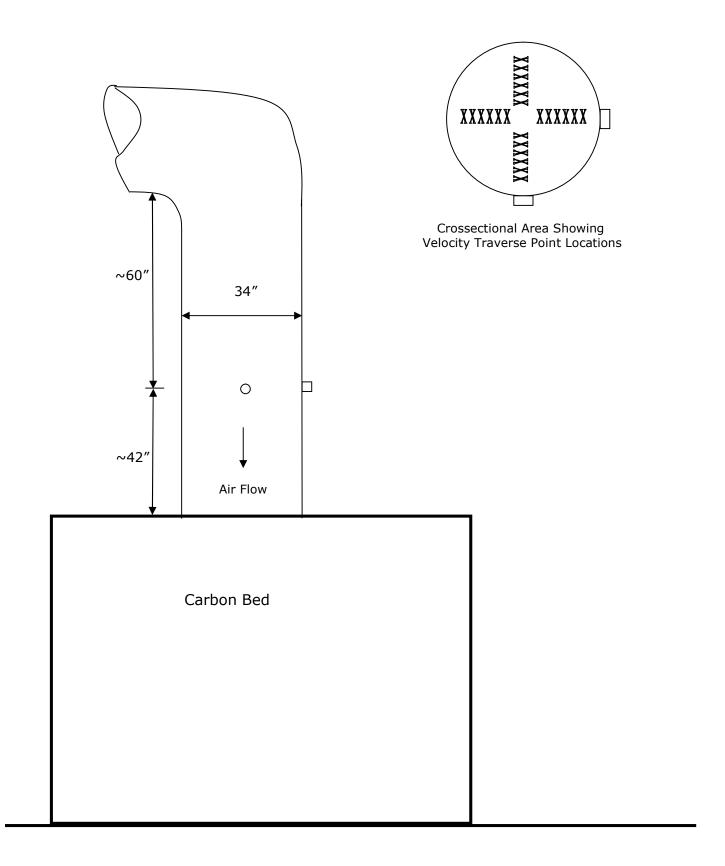


Figure 1
Carbon Bed Inlet Sampling Location
Polymer Process Aid
The Chemours Company
Fayetteville, North Carolina

# **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	Percent of Stack Diameter	Distance in Inches
Number	From Inside Wall	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

<sup>\*</sup>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.



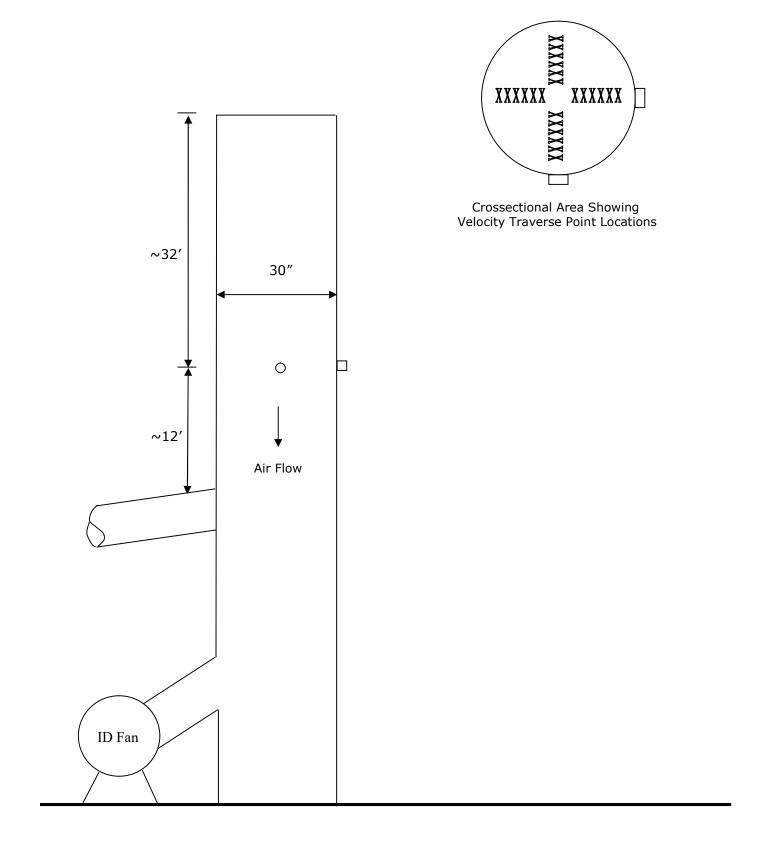


Figure 2
Carbon Bed Outlet Sampling Location
Polymer Process Aid
The Chemours Company
Fayetteville, North Carolina

# **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	Percent of Stack Diameter	Distance in Inches
Number	From Inside Wall	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

<sup>\*</sup>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**

# Field Data Summary The Chemours Company - Fayetteville Works Polymer Process Aid Carbon Bed Inlet Fayetteville, North Carolina

			Run 1							Run 2						Run 3			
Traverse	Stack	Delta	Delta	Tm	(F)	SQRT		Stack	Delta	Delta	Tm	(F)	SQRT	Stack	Delta	Delta	Tm	(F)	SQRT
Point	Temp(F)	P	н	in	out	Delta P		Temp(F)	P	н	in	out	Delta P	Temp(F)	P	н	in	out	Delta P
A1	71	0.50	1.65	66	65	0.7071		76	0.56	1.85	77	75	0.7483	77	0.55	1.82	81	79	0.7416
2	72	0.59	1.95	67	65	0.7681		76	0.56	1.85	78		0.7483	79	0.55	1.82	83	79	0.7416
3	72	0.59	1.95	69	68	0.7681		76	0.56	1.85	79		0.7483	79	0.55	1.82	84	79	0.7416
4	73	0.58	1.91	71	66	0.7616		76	0.53	1.75	80	75	0.7280	79	0.55	1.82	85	79	0.7416
5	72	0.56	1.85	73	67	0.7483		76	0.53	1.75	81	76	0.7280	79	0.53	1.75	86	79	0.7280
6	72	0.51	1.68	74	67	0.7141		76	0.51	1.68	82	76	0.7141	79	0.50	1.65	86	80	0.7071
7	72	0.47	1.55	75	67	0.6856		76	0.50	1.65	83	76	0.7071	79	0.38	1.25	86	80	0.6164
8	72	0.35	1.16	76	68	0.5916		76	0.48	1.58	83	76	0.6928	79	0.35	1.16	85	80	0.5916
9	72	0.34	1.12	77	69	0.5831		76	0.47	1.55	84		0.6856	78	0.31	1.02	87	80	0.5568
10	71	0.29	0.96	77	69	0.5385		76	0.40	1.32	84	77	0.6325	78	0.23	0.76	86	80	0.4796
11	70	0.22	0.73	78	70	0.4690		76	0.24	0.79	84	77	0.4899	77	0.23	0.76	86	80	0.4796
12	69	0.22	0.73	78	71	0.4690		74	0.24	0.79	83	77	0.4899	77	0.23	0.76	86	81	0.4796
B1	73	0.51	1.68	76	72	0.7141		77	0.58	1.91	81	77	0.7616	79	0.55	1.82	84	81	0.7416
2	74	0.51	1.68	77	72	0.7141		77	0.58	1.91	82	77	0.7616	80	0.55	1.82	85	81	0.7416
3	74	0.50	1.65	78	72	0.7071		77	0.58	1.91	83	78	0.7616	79	0.55	1.82	86	81	0.7416
4 5	74 74	0.49	1.62	80	73 73	0.7000		77 77	0.55	1.82	83	78	0.7416	79	0.54	1.78	86	81	0.7348
6		0.48	1.58	80	73	0.6928		77	0.54	1.78	84		0.7348	79	0.54	1.78	87	81	0.7348
7	74 74	0.47 0.47	1.55 1.55	81 82	74	0.6856 0.6856		77	0.52	1.72 1.22	85 85	78 78	0.7211 0.6083	79 80	0.49	1.62 1.58	86 87	81 81	0.7000 0.6928
8	74	0.47	1.49	82	74	0.6708		77	0.37	1.22	85		0.6083	80	0.48	1.58	88	81	0.6928
9	74	0.43	1.45	82	74	0.6633		77	0.37	1.06	85	79	0.5657	80	0.46	1.52		81	0.6782
10	73	0.44	0.76	82	75	0.6633		77	0.32	0.83	85		0.5000	80	0.46	0.86	88 88	81	0.5099
11	73	0.23	0.76	81	75	0.4796		77	0.25	0.83	84	79	0.5000	78	0.26	0.86	87	81	0.5099
12	72	0.23	0.76	81	75	0.4796		76	0.25	0.83	84		0.5000	78	0.24	0.79	86	81	0.4899
12	/2	0.23	0.70	01	/3	0.0000		70	0.23	0.03	- 04	/ 3	0.0000	76	0.24	0.75	- 60	- 61	0.0000
						0.0000							0.0000						0.0000
						0.0000							0.0000						0.0000
						0.0000							0.0000						0.0000
						0.0000							0.0000						0.0000
						0.0000							0.0000						0.0000
						0.0000							0.0000						0.0000
						0.0000							0.0000						0.0000
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						0.0000							0.0000						0.0000
						0.0000							0.0000						0.0000
						0.0000							0.0000						0.0000
						0.0000							0.0000						0.0000
						0.0000						_	0.0000						0.0000
					-	0.0000						-	0.0000						0.0000
					-	0.0000						-	0.0000				-		0.0000
						0.0000						_	0.0000						0.0000
	72	0.42	1 /11	77	71	0.0000		70	0.45	1 40	0.7	77	0.0000	70	0.42	1.42	96	90	0.0000
Average	73	0.43	1.41	77	71	0.6449	L	76	0.45	1.48	83	77	0.6616	79	0.43	1.42	86	80	0.6474



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

<u>Parameter</u>	<u>Run 1</u>	Run 2	Run 3
Run Date Start/Stop Time Duration of Run, Minutes Ave. Nozzle Diameter, inches Pitot Calibration Factor, CF Meter Gamma Meter Delta H, inches of H2O Stack Diameter, inches Rectangular Width, inches Rectangular Length, inches Stack Area, sq.ft.	3/11/21 0919-1107 96 0.243 0.84 0.983 1.71 34 0	3/11/21 1137-1322 96 0.243 0.84 0.983 1.71 34 0 0	3/11/21 1343-1527 96 0.243 0.84 0.983 1.71 34 0
Barometric Pressure, inches of Hg Static Pressure, inches of H2O Dry Gas Meter Sample Volume, (VM)ft3 Initial Final Total Volume Ave. Stack Temperature, Ts(F) Ave. Meter Temperature, Tm(F) Ave. Run Delta H, inches of H2O Ave. Square Root of Delta P	30.48 -1.6 595.047 660.632 65.585 72.5 73.7 1.41 0.6449	30.48 -1.6  660.775 727.731 66.956 76.3 79.9 1.48 0.6616	30.48 -1.7 727.995 793.633 65.638 78.8 83.1 1.42 0.6474
Moisture Data Volume of water collected, mls Silica Gel, grams Total Collected, mls	3 12.6 15.6	4 13.2 17.2	2.8 12 14.8
ORSAT Data %O2 %CO2 %CO	20.90	20.90	20.90
<u>Calculations</u>			
Vw(std), scf = Vm(std), dscf = Bws= Md= Ms= Vs, ft/sec = Qs, acfm = Qs(std), dscfm = Isokinetic Sampling Rate, %	0.734 65.197 0.011 28.84 28.72 36.2 13,690 13,622 97.6	0.810 65.808 0.012 28.84 28.70 37.3 14,098 13,914 96.5	0.697 64.125 0.011 28.84 28.72 36.6 13,827 13,599 96.2

# Where:

 $\overline{An}$  = 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 =  $17.647 \times Vm \times gamma \times [Pb + (dH/13.6)]/Tm(R)$ 

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 =  $[\text{Md} \times (1-\text{Bws})] + (18.0 \times \text{Bws})$ 

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

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

Qs(std) = stack gas flow rate, standard conditions = Qs x (1-Bws) x (528/(Ts(R)) x (Ps/29.92) Isokinetic sampling rate =  $\{(Ts(R)) \times (0.00267 \times Vlc) + (Vm(std)/17.647)] \times 100\}/(Time \times vs \times Ps \times An \times 60)$ 



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

Parameter:			Ru	ın 1			Ru	ın 2			R	un 3			А	verage	
	Mol. Wt.	mg	mg/dscm	ppm	<u>lb/hr</u>	mg	mg/dscm	<u>ppm</u>	lb/hr	mg	mg/dscm	<u>ppm</u>	<u>lb/hr</u>	mg	mg/dscm	ppm	<u>lb/hr</u>
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, milliarams
mg/dscm = milliarams 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/moll/mol.wt))

Pollutant Emission Rate:  $lb/hr = pounds \ of \ pollutant \ emitted \ per \ hour = ma/1000/f(453.59 \ a/lb)/(dscf)l \ x \ dscfm \ x \ 60 \ min/hr \ a/lb/hr \ a/lb/hr$ 



# **Example Calculations**

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

Note: Values are shown for example purposes only.

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

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

# Volume of dry gas at standard conditions (dscf)

= 17.647x Vm, a x Gamma\*[Pbar+(DeltaH/13.6)]/Tm(R)

= 17.647 X 0.000 x 0.983 x (30.48 + [ ( 1.710 /13.6)/ 534

= 65.197

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

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

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

 $= (0.04707) \times (VI,c)$  $= 0.04707 \times 15.6$ = 0.734

## Proportion by volume of water vapor in gas stream Bwo =

= Vw,std/(Vw,std+Vm,std) /( 0.73 + 65.197) 0.73 0.011

### Ps =Stack gas static pressure (in. Hg)

= St/13.6-1.60 / 13.6 -0.118

### Pa = Absolute stack gas pressure (in. Hg)

= Ps+Pbar -0.118 + 30.48 30.36

## MFD =Dry mole fraction of stack gas

1-Bwo 1 - 0.011 0.989

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

 $= (0.32 \times \%O2) + (0.44 \times \%CO2) + (0.28 \times \%N2)$  $(0.32 \times 20.90) + (0.44 \times 0.00) + (0.28 \times 0.00)$ 79.10) 28.84

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

 $= (Md) \times (MFD) + (0.18) \times (Bwo*100)$  $28.84 \times 0.989 + 0.18 \times 1.11372$ 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)
         = Kp \times (Cp) \times (sqrt,deltaP) \times sqrt((Ts + 460°R)/Mw*Pa))
         = 85.48 x 0.84 x 0.64 x sqrt (
             36.2
Α
           Cross sectional areas of stack (sq. ft)
         = pi/4*d^2
         = 3.14159/4 \times 2.83 ^2
             6.30
           Volumetric flow rate at actual conditions (acfm)
Qa
         = (60) sec/min(A)(Vs, avg)
             60
                    x 6.3050 x 36.19
         = 13,689
Ostd
           Volumetric flow rate at standard conditions (scfm)
         = Qa \times (528/Ts,avg + 460) \times Pa/29.92
             13,689 x ( 528 / 533 ) x 1.015
              13,774
         Volumetric flow rate at dry standard conditions per minute(dscfm)
Qstd,dry
         = Qstd x (1-Bwo)
         = 13,774 x
                        0.9889
         = 13,621
mg/dscm HFPO-DA concentration
         = (mg/dscf) \times 35.314 \text{ cu. ft./cu. meter}
       = ( 0.220 / 65.20 ):35.314
         = 1.19E-01
lb/hr
           HFPO-DA Mass Emission Rate
         = mg/1000/[(453.59 g/lb)/(dscf)] \times dscfm \times 60 min/hr
         = 0.220 / 1,000 / [453.59) / 65.20] x 13,622 x
```

RAMBOLL

= 6.08E-03

60

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

Run # 2

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

Run # 3

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



# **EPA Isokinetic Field Sheet**

Methods Performed 07M-45 Pitot Leak Check Rates Sample Rate in. cfm . 000 Initial . 84 16-513 3 2.49 Stack TC I.D. Oven Box I.D. Impinger Out I.D. Pitot Coefficient Pitot Number 30.48 Static Pressure - 1.0.
Meter Box # 10 The Chemours Conpany Run Number Gayetheville Stack Diameter Barometric Pres. 3/11/2021 SRW Operators Location Source Start Ti End Tirr Client Date

ne Velocity ne Head in) (in. H <sub>2</sub> 0) 2 0.50 2 0.50 0 0.51 0 0.51 0 0.51 0 0.51 0 0.51														
Head (in, H <sub>2</sub> O) (	Orifice	Meter		empera	ture R	Temperature Readings in Degrees Farenheit	Degree	s Farenh	eit			Im	Impinger Data (vol)	a (vol)
20.59 20.59 20.59 20.59 20.50 20.51 20.50	Setting (in. H <sub>2</sub> 0)	Volume (ft²)	Stack	Probe	Oven	Impinger	Aux	Meter	Meter Outlet	Vacuum (in. hg)	Comments/Notes	# 4	Initial	Final
20.59 20.59 20.59 20.50	1.65	545.047	11	00	18		48	99	6.5	S	K= 3.3	7		
20.59 0.55 0.07 0.55 0.05 0.05 0.05 0.05 0.05	1.95	597.91	21		28	તેવ	45	107	(05	0	1.356	М		
20.05 20.07 20	1.95	401.50	21	3	18	5/1	Lh	69	89	9		4		
0.550 0.347 0.35 0.034 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.5	1.41	54.409	73	2	83	dS	Sh	11	20	5		Ĺ		
15.0 0.35 0.27 0.25	1.85	(007.43	26	_	80	45	43	73	(0)	5.5		9		
25.00 0.347 25.00 0.347 12.00 0.369 12.00 0.369 12.00 0.369	1.68	26.010	21		36	Sh	43	hL	100	5.5				
25.0 0.34 0.50 15.0 15.0 0.50 0.50 0.50 0.50	1.55	613.61	11	90	76	Sh	43	15	67	5.5		Sili	Silica Gel Data (gm)	a (gm)
22.00 15.00 15.00 15.00	-16	26.919	21	18	18	45	48	26	89	S		#	Initial	Final
\$5.0 15.0 15.0	214	52.619	21	7. 10	75	4S	64	22	60	4.5		1		
15.0 15.0 15.0	0.96	86.129	11	80	22	45	44	26	60	4.5		2		
15.0 05.0 08.0 08.0	0.73	14.420)	20		15	46	ols	36	70	7				
	51.0	626.34	60	19	28	216	47	18	71	8			Moisture Gain	ain
		628.339									5/201:1007	Ľ		ml.
	1.63	628.339	73	. 66	75	217	53	76	76	2	Sact: 10191			gm
	1.08		14	200	79	47	46	17	12	5				
	1.65		14		29	25	न्त	78	11	S				Total
	1.07		74	18	15	4,6	9	80	73	5				
	1.58	-	74	19	75	48	45	08	73	8				
16 0.4	1.55	12	701	80	75	4	45	18	73	6			Filter Data	rg.
_	1.55	10.54a	74		75	Sh	42	28	74	S,		#	Number	Tare
51.0	1.49	18.52	74	23	78	45	97	8.2	74	'S		+		
D-44	1.45	-	14		78	97	60	24	74	5		2		
88 0.23	0.76		13	080	h&	934	84	45	22	8		m		
	0.76	1056.46	26	83	301	مره	47	30	75	3				
96 0.23	0.76	658.55	22	79 5	8	46	48	00	75	3		1olecu	Iolecular Weight Data (%	Data (%
		1060.632	1			41					Lost	#	02	CO2
												Н		
							A					2		
	Ī				-							m		
	1											Avg		



(F

# **EPA Isokinetic Field Sheet**

Methods Performed of 10. 45 TC-5B 18. Impinger Out I.D. Pitot Coefficient Stack TC I.D. Oven Box I.D. Nozzle Size XAD Trap I.D. Pitot Number 0.983 Barometric Pres. 30.48 Static Pressure - 1.10 0 Stack Diameter\_ Meter delta H Meter Gamma Run Number Meter Box # The Chemours Conpany PPASINIE 3/11/2021 SRW Operators Start Time End Time Location Client Source Date

	Leak (	Check Rates	10
	San	nple Rate	Pitot
	in.	ctm	+
Initial	0	100.	7
Z Z			
Final	(j	0.000	)

ta (vol)	Final							ta (gm)	Final				Sain	ml.	gm		Total			ta	Tare					t Data (%	CO2				
Impinger Data (vol)	Initial							Silica Gel Data (gm)	Initial				Moisture Gain							Filter Data	Number					Iolecular Weight Data (%	02				
디	# 1	7	m	4	2	9		Si	#	1	2										#	-	7	m		Jolec	#	ы	7	m	Avg
	Comments/Notes	K-33												5221:0a45	Spect: 1234											725.34	1322				
	Vacuum (in. hg)	5.5	5.5	e.	e	9	٥	1.0	6	()	9	0)	7		9	٥	(0	و	e	5.5	و	5.5	5	2	2	7					
eit	Meter Outlet	JE	75	54	75	76	20	26	21	11	11	11	4		77	11	78	75	18	78	78	78	79	19	29	19					
Farenhe	Meter Inlet	17	78	36	30	18	25	63	43	84	74	44	55		18	25	83	33	84	35	85	\$52	45	35	44	25	100	F			
Degrees	Aux	54	20	hh	45	43	77	212	45	46	45	de	47		51	93	44	14	47	43	43	નત	45	ds.	35	1					
Temperature Readings in Degrees Farenheit	Impinger	25	55	38	53	15	20	25	50	199	So	20	15		2.5	15	19	50	49	6)2	10	49	610	20	205	50					
ature Re	Oven	38	30	h8	83	33	33	30	83	28	44	78	283		33	3	83	28	53	54	53	85	34	83	50	83					i
rempera	Probe	28	90	83	83	28	83	106	83	53	33	83	83		83	33	83	83	83	33	53	83	43	87	33	43	,				
	Stack	Mr.	26	nc.	76	710	16	16	76	16	26	36	m.		77	7	1.1	17	22	23	11	27	11	11.	75	26					
Meter	Volume (ft <sup>2</sup> )	511.099	1063.91	666.15	569 42	25-219	15.54	21.810)	1081.35	11.921.71	(237.74	690.61	46.250	694.953	W941.953	697.68	100.51	7034	206.62	709.60	712.51	11572	718.52	20.126	724,10	726.84	727 731				
Orifice	Setting (in. H <sub>2</sub> 0)	1.95		1.45		1.75	1.68	1.65	1.58	1.55	1.32	2.74	50.0		1.6.1	1.6.1		1.8.1	\$1.18	1.72	1.7.1	1.22	1.00	0.83	0.63	580					
Velocity	Head (in. H <sub>2</sub> O)	0.56	0.80	950	0.53	550	0.51	0.50	6.48	Ch.0	0.40	12.0	12.0		0.53	85.0	0.54	0.55	150	25.0	0,37	C-3-7	25.52	57.0	5.45	6.73					
Sample	Time (min)	J	8	11	١٩	20	H			36		hh	48		25	26	00	وم	89		76	80	84	88	26	96	J. W.				
Sample Sample	Point		٠,	3	-	8	و	1	8	6	0	=	21		-	2		2	5	و	1	80		0	=	7.1					



# **EPA Isokinetic Field Sheet**

Methods Performed CTM 45 Leak Check Rates TC-58 Impinger Out I.D. Pitot Coefficient Pitot Number Stack TC I.D. Oven Box I.D. Nozzle Size XAD Trap I.D. 0.983 Barometric Pres. 30.48 Static Pressure -1.7 Stack Diameter Meter delta H Meter Gamma Run Number Meter Box # The Chemous Company Facetherille Opphynlet 3/11/2021 1343 Start Time Operators End Time Location Source Client Date

	LEGAR C	LEAK CITECK KALES	•
	Sam	Sample Rate	Pitot
	in.	cfm	+
Initial	5	Coop	1
PIW			
PiW			
Final	2	5,550	1
	II	npinger Data	ita (vol)
nents/Notes	#	Initial	Final

Impinger Data (vol)	# Initial Final	2	3	4	5	9		Silica Gel Data (gm)	# Initial Final	1	2		Moisture Gain	ml.	шб		Total			Filter Data	# Number Tare	1	2	3		Nolecular Weight Data (%	# 0 <sub>2</sub> CO <sub>2</sub>	7	2	3	Avg
	Comments/Notes								1.16			A CONTRACTOR OF THE PERSON OF		Stor 1431	Stor 1439												12.51				
	Vacuum (in. hg)	e	o	5.0)	,	é	9	9	0	9	Ŝ	2	· ד			5.	9	9	5.5	5.	5.5	5	8	7	5	3.5					
eit	Meter Outlet	66	29	56	29	20	29	69	08	8	00	38	15		1%	41	18	18	19	81	81	81	-49 1	181	18	31					
Farenh	Meter Inlet	41	83	84	45	36	86	360	85	63	860	960	36		44	955	360	30	47	500	81	88	88	43	5	380		l'a			
Degree	Aux	5/2	6)	bh	25	47	50	30	(1)	250	16	48	20		49	いっ	416	47	45	50	45	44	46	47	47	47					
Temperature Readings in Degrees Farenheit	Impinger	25	25	25	15	So	51	51	50	20	8-0	49	49		48	13	45	45	מל	45	43	75	44	מת	\.	75					
ature R	Oven	90	49	35	43	83	33	70	83	35	55	36	35		35	28	434	95	85	55	24	50	85	36	30	36					
Temper	Probe	33	33	34	43	33	83	53	83	45	4	36	38		83	23	45	301	35	84	35	24	45	83	35	35					
	Stack	14	79	29	29	29	79	19	79	34	18	17	27		20	80	79	34	20	79	8	650	30	90	24	-				1	
Meter	Volume (ft³)	565 126	721.21	135.92	727.3	739.95	743.34	747.01	744.35	152.61	755.31	757.61	71.986	761.461	761461	71,3.62	766.31	769.15	772.41	774.81	718.12	780.82	783.71	726.91	140.42	741.24	793,633				
Orifice	Setting (in. H <sub>2</sub> O)	281	1.82	1.87	1.55	1.75	1.65	1.13	1.25 July	1,0%	20.0	01.0	0.76		1.82	182		1.78	1.74	1,00	1.53	1.52	1.52	0.40	67.0						
Sample Sample Velocity	Head (in. H <sub>2</sub> O)	55.0	0.55	550	0.55	6.53	0.50	0.38	17.35	15:0	0.23	57.0	0.23		C.53	5.55	55.0	6154	12.0	0.49	0.4%	94.9	0,46	0.76	P1.0	020					
Sample	Time (min)	h	8	ľ	9	20	M	28	32	36	40	70	48	1 1 1	25	26	09		89	12	96	80	h8	88		96					
Sample	Point	1	2	3	2	2	و	~	00	6	0	11	7		-	1	3	3	S	و	,	80	6	0	=	21					



# **PPA Carbon Bed Outlet Field Test Data**

#### Field Data Summary The Chemours Company - Fayetteville Works Polymer Process Aid Carbon Bed Outlet Fayetteville, North Carolina

			Run 1						Run 2						Run 3			
Traverse	Stack	Delta	Delta	Tm	(F)	SQRT	Stack	Delta	Delta	Tm	(F)	SQRT	Stack	Delta	Delta	Tm	(F)	SQRT
Point	Temp(F)	P	Н	in	out	Delta P	Temp(F)	P	Н	in	out	Delta P	Temp(F)	P	Н	in	out	Delta P
A1	78	0.18	0.54	63	61	0.4243	83	0.34	1.02	79	78	0.5831	84	0.20	0.60	82	81	0.4472
2	78	0.20	0.60	63	62	0.4472	83	0.34	1.02	81	77		84	0.20	0.60	83	81	0.4472
3	80	0.36	1.08	65	62	0.6000	83	0.38	1.14	83	77	0.6164	84	0.35	1.05	85	81	0.5916
4	81	0.41	1.23	68	62	0.6403	83	0.45	1.35	84	78		84	0.38	1.14	87	81	0.6164
5	81	0.41	1.23	70	63	0.6403	83	0.45	1.35	85	78		84	0.42	1.26	88	81	0.6481
6	81	0.45	1.35	72	64	0.6708	83	0.47	1.41	86	78		84	0.42	1.26	89	81	0.6481
7	81	0.50	1.50	75	65	0.7071	83	0.50	1.50	87	79		84	0.50	1.50	89	82	0.7071
8	81	0.52	1.56	77	66	0.7211	83	0.47	1.41	87	79		84	0.50	1.50	90	82	0.7071
9	82	0.50	1.50	79	68	0.7071	83	0.49	1.47	88	79		84	0.50	1.50	91	82	0.7071
10 11	81 81	0.50	1.50 1.50	80 82	68 69	0.7071 0.7071	83 84	0.49	1.47 1.47	87 87	80		84 84	0.50	1.50 1.50	91 91	83 83	0.7071 0.7071
12	82	0.50	1.50	83	70	0.7071	84	0.49	1.41	87	80		84	0.50	1.50	91	83	0.7071
B1	83	0.32	0.96	78	73	0.5657	80	0.47	0.54	83	80		85	0.34	0.54	85	83	0.5831
2	82	0.34	1.02	82	73	0.5831	83	0.30	0.90	84	80		85	0.40	1.20	88	84	0.6325
3	82	0.39	1.17	84	74	0.6245	84	0.40	1.20	84	80		84	0.42	1.26	89	84	0.6481
4	83	0.45	1.35	85	74	0.6708	84	0.40	1.20	85	80		84	0.42	1.26	91	84	0.6481
5	83	0.48	1.44	87	75	0.6928	83	0.44	1.32	86	80		84	0.46	1.38	90	84	0.6782
6	83	0.50	1.50	85	76	0.7071	84	0.48	1.44	86	80		85	0.46	1.38	91	84	0.6782
7	84	0.52	1.56	85	76	0.7211	84	0.50	1.50	86	80		84	0.49	1.47	92	84	0.7000
8	84	0.52	1.56	85	76	0.7211	83	0.49	1.47	88	80	0.7000	84	0.49	1.47	92	84	0.7000
9	84	0.52	1.56	85	76	0.7211	83	0.49	1.47	87	80	0.7000	83	0.50	1.50	91	84	0.7071
10	84	0.50	1.50	85	76	0.7071	84	0.49	1.47	87	81	0.7000	83	0.50	1.50	91	84	0.7071
11	84	0.50	1.50	85	77	0.7071	83	0.49	1.47	88	81	0.7000	84	0.50	1.50	91	84	0.7071
12	83	0.50	1.50	85	77	0.7071	83	0.48	1.44	88	81		83	0.50	1.50	91	84	0.7071
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
					-	0.0000						0.0000						0.0000
					-	0.0000						0.0000						0.0000
1					-	0.0000						0.0000						0.0000
					_	0.0000						0.0000						0.0000
1						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
] [						0.0000						0.0000						0.0000
] [						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
Average	82	0.44	1.32	79	70	0.6587	83	0.44	1.31	86	79	0.6570	84	0.44	1.29	89	83	0.6557



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

<u>Parameter</u>	Run 1	Run 2	Run 3
Run Date Start/Stop Time Duration of Run, Minutes Ave. Nozzle Diameter, inches Pitot Calibration Factor, CF Meter Gamma Meter Delta H, inches of H2O Stack Diameter, inches Rectangular Width, inches Rectangular Length, inches Stack Area, sq.ft. Barometric Pressure, inches of Hg	3/11/21 0919-1107 96 0.243 0.84 0.968 1.56 30 0 4.91	3/11/21 1137-1322 96 0.243 0.84 0.968 1.56 30 0 4.91 30.48	3/11/21 1343-1527 96 0.243 0.84 0.968 1.56 30 0 0 4.91 30.48
Static Pressure, inches of H2O Dry Gas Meter Sample Volume, (VM)ft3  Initial Final Total Volume Ave. Stack Temperature, Ts(F) Ave. Meter Temperature, Tm(F) Ave. Run Delta H, inches of H2O Ave. Square Root of Delta P Moisture Data	577.244 645.176 67.932 81.9 74.4 1.32 0.6587	645.462 713.603 68.141 83.2 82.5 1.31 0.6570	713.984 782.432 68.448 84.0 86.0 1.29 0.6557
Volume of water collected, mls Silica Gel, grams Total Collected, mls ORSAT Data	3.6 13 16.6	2.4 13.4 15.8	4.6 11.4 16.0
%02 %CO2 %CO	20.90	20.90 0.0	20.90
<u>Calculations</u>			
Vw(std), scf = Vm(std), dscf = Bws= Md= Ms= Vs, ft/sec = Qs, acfm = Qs(std), dscfm = Isokinetic Sampling Rate, %	0.781 66.398 0.012 28.84 28.71 37.1 10,936 10,780 97.8	0.744 65.608 0.011 28.84 28.71 37.1 10,921 10,745 96.9	0.753 65.477 0.011 28.84 28.71 37.0 10,908 10,714 97.0

#### Where:

 $\overline{An}$  = 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 =  $17.647 \times Vm \times gamma \times [Pb + (dH/13.6)]/Tm(R)$ 

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 =  $[\text{Md} \times (1-\text{Bws})] + (18.0 \times \text{Bws})$ 

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

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

Qs(std) = stack gas flow rate, standard conditions = Qs x (1-Bws) x (528/(Ts(R)) x (Ps/29.92) Isokinetic sampling rate =  $\{(Ts(R)) \times (0.00267 \times Vlc) + (Vm(std)/17.647)] \times 100\}/(Time \times vs \times Ps \times An \times 60)$ 



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

Parameter:			Ru	un 1			Ru	ın 2			R	un 3			Av	verage	
	Mol. Wt.	mg	mg/dscm	ppm	<u>lb/hr</u>	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	<u>ppm</u>	<u>lb/hr</u>	mg	mg/dscm	<u>ppm</u>	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, milliarams
mg/dscm = milliarams 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/moll/mol.wt))

Pollutant Emission Rate:  $lb/hr = pounds \ of \ pollutant \ emitted \ per \ hour = ma/1000/f(453.59 \ a/lb)/(dscf)l \ x \ dscfm \ x \ 60 \ min/hr \ a/lb/hr \ a/lb/hr$ 



#### **Example Calculations**

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

Note: Values are shown for example purposes only.

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

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

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

= 17.647x Vm, a x Gamma\*[Pbar+(DeltaH/13.6)]/Tm(R)

=  $17.647 \times 0.000 \times 0.968 \times (30.48 + [(1.560 /13.6)])$  534

= 66.398

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

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

total: 16.6

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

= (0.04707) x (VI,c) = 0.04707 x 16.6 = 0.781

#### Bwo = Proportion by volume of water vapor in gas stream

= Vw,std/(Vw,std+Vm,std) = 0.78 / ( 0.78 + 66.398 ) = 0.012

#### Ps = Stack gas static pressure (in. Hg)

= St/13.6 = 2.00 / 13.6 = 0.147

#### Pa = Absolute stack gas pressure (in. Hg)

= Ps+Pbar = 0.147 + 30.48 = 30.63

#### MFD = Dry mole fraction of stack gas

= 1-Bwo = 1 - 0.012 = 0.988

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

=  $(0.32 \times \%02) + (0.44 \times \%C02) + (0.28 \times \%N2)$ =  $(0.32 \times 20.90) + (0.44 \times 0.00) + (0.28 \times 79.10)$ = 28.84

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

= (Md) x (MFD) + (0.18) x (Bwo\*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)
         = Kp \times (Cp) \times (sqrt,deltaP) \times sqrt((Ts + 460°R)/Mw*Pa))
         = 85.48 x 0.84 x 0.66 x sqrt (
             37.1
Α
           Cross sectional areas of stack (sq. ft)
         = pi/4*d^2
         = 3.14159/4 \times 2.50 ^2
            4.91
           Volumetric flow rate at actual conditions (acfm)
Qa
         = (60) sec/min(A)(Vs, avg)
            60
                    x 4.9087 x 37.13
         = 10,935
Ostd
          Volumetric flow rate at standard conditions (scfm)
         = Qa \times (528/Ts,avg + 460) \times Pa/29.92
             10,935 x ( 528 / 542 ) x 1.024
             10,906
         Volumetric flow rate at dry standard conditions per minute(dscfm)
Qstd,dry
         = Qstd x (1-Bwo)
         = 10,906 x
                        0.9884
         = 10,779
mg/dscm HFPO-DA concentration
         = (mg/dscf) \times 35.314 \text{ cu. ft./cu. meter}
       = (0.008 / 66.40):35.314
         = 4.17E-03
lb/hr
           HFPO-DA Mass Emission Rate
         = mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr
         = 0.008 / 1,000 / [453.59] / 66.40] x 10,780 x
                                                                          60
```

= 1.68E-04

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

Run # 2

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

Run # 3

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



# **EPA Isokinetic Field Sheet**

Methods Performed MooiFiles Mooi o

			Initial	Mid	Mid	Final
Pitot Number P4-1/10710	0.84	72.70	083	D. To11	0 ,243	
Pitot Number	Pitot Coefficient	Stack TCI.D.	Oven Box I.D.	Impinger Out I.	Nozzle Size	XAD Trap I,D.
-	34	30.45	+2.0	MBAB	1.56	996.0
Run Number	Stack Diameter	Barometric Pres.	Static Pressure	Meter Box # M848	Meter delta H	Meter Gamma
Client THECHEMOURS COMPONING	PAYETTENILE, NO	PPA SUTLET	3/11/21	Sc/38	0919	1107
Client	Location	Source	Date	Operators	Start Time	End Time

	Leak C	eak Check Rates	
	Sam	Sample Rate	Pitot
	in.	cfm	+
Initial	0/	6.007	7
Mid			
Final	o	2000	1
	1	Impinger Data	ta (vol)
nts/Notes	#	Initial	Final
0	н		
90	7		
	m		
	4		
	į		

ata (vo	Fin							Data (gr	Fin				Gain	m.	gm		Total			ata	Tar					ht Data	00			
Impinger Data (vo	Initial							Silica Gel Da	Initial				Moisture							Filter Data	Number					1olecular Weight Data	05			
In	# #	7	n	4	25	9		Si	#	Н	7										#	1	7	m		10lect	#	-1	7	m
	Comments/Notes	4P: 0.18											5206 1007		START 1019															
	Vacuum (in. hg)	2	7	7	4	4	h	<b>V</b>	5	5	6	8	S	1	'n	5	3	5	2	5	5	5	S	S	\n	b				
(t	Meter Outlet	9	79	29	29	63	40	65	99	80	00	69	20	1	13	25	14	74	75	76	76	76	16	76	17	77				
Temperature Readings in Degrees Farenheit	Meter Inlet	63	63	59	68	20	72	75	77	29	8	25	83	1	18	82	78	88	200	88	85	285	285	SS	88	85				
Degrees	Aux	So	49	84	54	6/4	64	So	25	SO	20	S	28	1	So	65	54	47	49	es	47	47	202	20	15	64				
dings in	Impinger	29	47	54	46	77	48	64	So	49	64	48	48	l	57	48	64	64	48	50	20	15	25	52	15	25				
ture Rea	Oven In Box	87	86	88	ති	88	68	88	06	88	50	87	86	l	16	06	16	88	90	16	9	92	16	16	20	90			Ī	
empera	Probe	36	18	ŊП	26							89	88	l	90	68	58	85	88	06	06	16	92	89	90	16				
	Stack	78	78	08	ā	છ	8	.180	18	82	8	90	28	ı	83	82	28	83	83	83	BH	100	18	700	200	23				
Meter	Volume (ft <sup>2</sup> )	577.244	579.0	188		586.4	58	592.1	594.8	598.3	6.009	2.409	607.3	610.192	)	1	2:519	617.8	620.5	623.7	627,1	630.0	632.8	$\vdash$	-	-				
Orifice	Setting (in. H <sub>2</sub> O)	45.0	00.00	801	1.23	1.23	1.35	1.50	1.56	1.50	1.30	1.50	1.50	1	96.9	1.02	1.17	1.35	1.54	1.50	1.56	1.56	1.56	1.50	1.50	1.50				
Velocity	Head (in. H <sub>2</sub> Q)	D 31-0		0.36	14.0	16.0	24.0	0.50	0.52	05.0	0.50	05.0	05.0	1	0.32	0.34	0.39	24.45	84.0	0.20	6.42	0.52	0.52	0.20	0.50	0.50				
sample	Time (min)	5	00	12	16	20		28	32	36	100	hh	48		25	26	09	100	68	72	76	08	84	-	26	96				
Sample Sample Velocity	Point	1	2	3	7	J	٥	7	90	8	10	11	12	1	1	2	3	7	S	9	7	ĢE	0	01	11	17				



# **EPA Isokinetic Field Sheet**

Methods Performed MonFigo Monto 500 Impinger Out I.D. Zorz Nozzle Size 0.24 Pitot Coefficient Stack TC I.D. Oven Box I.D. Nozzle Size XAD Trap I.D. Pitot Number 1.56 30.45 Barometric Pres. Stack Diameter Static Pressure Meter delta H Meter Gamma Run Number Meter Box # THE CHEMONES COMPONY FRYETTENLIE, NC

3/11/21

Location Source

Client

1137

Operators Start Time End Time

Date

ses	Pitot	+	7		7	1
eak Check Rates	ple Rate	cfm	0.00			0.00
Leak C	Sam	in.	21			14
			Initial	Mid	PIW	Final

ta (vol)	Final							ta (gm)	Final				Gain	ml.	dm		Total			ıta	Tare					t Data (%	CO2				
Impinger Data (vol)	# Initial							Silica Gel Data (gm)	t Initial				Moisture Gain							Filter Data	Number		37			10lecular Weight Data (%	02				
	# -	7 6	10	) 4	- 10	9		L	#	7	7		Щ	L							#	-	7	m		Jole	#	-	2	n	
	Comments/Notes												1225		C 79.997	1234			-	. 48											
	Vacuum (in ha)	V	1	ماه	34	1	0	0		1	7	۲.	7		4	P	4	U	v	1	1	1	1	7		7					
sit	Meter	18	ı	12	78	78	18	29	7.9	62	80	80	80		80	08	80	80	0	0	80	00	80	8	(8)	80	1				
Farenhe	Meter	19	ė	000	30	0	000	87	897	86	83	87	87		83	84	48	00	98	86	98	88	7	18	80	88					
Degrees	Aux	24	2	27	43	43	43	23	43	45	47	47	47		46	47	20	AG	43	46	47	46	47	49	40	40					
lemperature Keadings in Degrees Farenheit	Impinger	29	1	200	25	617	50	So	S	53	54	58	55		28	55	55	53	23	53	S	54	SS	99	26	26					
sture Re	Oven 1	600	8	200	5	89	15	26	92	26	16	36	28		90	16	16	35	16	16	26	92	26	16	16	91					
empere	Probe	06	9	80	200	88	88	8	90	89	30	90	30		90		28	31	91	25	63	-	9	92	16	16					
	Stack	22	0	100	100	SA	83	200	83	83	80	84	20	111	80		84	84	83	84	84	83	283	84	83	83	)				
Meter	Volume (ft <sup>3</sup> )	נחב חנים		6509	653.5	656.4	658.9	662.3	664-	668.30	671.30	1	677.60	Geo.	679.990	682-	684.50	586.60	690.30	66.269	695.40	cp 863	701-	704	707.30	766.30		713.603			
Orifice	Setting (in. H <sub>2</sub> O)	1.02	1.00	177	1.36	-35	16.4	1.50	1.41	1.47	1.47	1.47	1.4		. 54	.90	1.20	1,20	1.32	1.44	1.50	1.47	1.47	1.47	1.47	1.44					
Velocity	Head (in. H <sub>2</sub> O)		72 0	0, 20	6.45	0.45		0.50	14.	45	49	60	. 47		110	30	40	9	.44	440	,50	.49	.49	64.	49	48					
Sample	Time (min)	-		1	9	2.0	3	28	32	36	do	hh	48		52	20	09	60	68	75	26	80	84	80	92	9					
Sample Sample Velocity	Point	-			.5	b	e	7	Ø	6	01	11	12			2	01	3	5	9	7	g	٥	10	"	71					

## **EPA Isokinetic Field Sheet**

Methods Performed Moorfies Mooto P4-1/12-7D 0.84 70-75 083 5.2.0 TOIL Stack TC I.D.
Oven Box I.D.
Impinger Out I.D.
Nozzle Size
XAD Trap I.D. Pitot Coefficient Pitot Number 0.966 Stack Diameter Barometric Pres. Meter delta H Meter Gamma Static Pressure Run Number Meter Box # THE CHEMOURS COMPANY FAMETICULAR NO.
PUR OUTUET
SHITS
SHITS
1543 Start Time Operators End Time Location Source Client Date

nitial	Sarr in.	Sample Rate n. cfm	Pitot	٦ , ٩
Final	0/	300.0	7	1

-	Σ		0,00			John Mary			100
Meter Meter Inlet Outlet	Aux I	Impinger		Box	Probe		Probe	Setting Volume Stack Probe (in. $H_2O$ ) (ft <sup>2</sup> )	Volume Stack Probe
	3 75	64		26	26 86	93	93	984 84 93	713.984 84 93
		57	7	16	6 16	41	16 48	16 68	0.6 716.0 84 41
	48	5.3	3	93	7	9.2	84 92	- 84 92	76 84 92
	Н	53	_	5	98 9	98	84 98	2 84 98	2 84 98
	-	23	77	0		6	3 84 91	3 84 91	1.26 723,3 84 91
		53	26		2	26	38 92	38 92	726.2 85 92
		25	16			16	16 20	16 20	1.50 728.9 84 91
		2	92			92	84 92	84 92	1,50 732.1 84 92
		is	0	0	_	90	06 48 2	735.2 84 90	0 1,50 735.2 84 90
		S	33	3		5	34 91	738.2 34 91	1.50 738.2 84 91
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-	1	51	20	9.	92	92	20 84 92	255.20 84 92	1.26 755.20 84 92
		52	32		93	84 93	00 84 93	759,00 84 93	759,00 84 93
	1	55	33	v	93	85 33	20 85 93	261.20 85 93	261.20 85 93
		18	36		93	84 93	30 84 93	764.30 84 93	1,47 764,30 84 93
	3	52	93			4	48 68	48 68	1.47 767.50 84
		-	93		1000	83	.99 83	.99 83	269.99 83
-		54	93			83	2.83	173.2 83	1.50 073.2 85
	1	54	56	_	33	84 33	3 84 %	406.3 84 23	1.50 476.3 84 93
)	4c 9	53	82	0	92	26 88	76 88 4.	1119.7 83 92	1.50 4119.7 83 92
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						2	782.432	782.432	782.432
			П						
7000 W444W444W444		2000	50000000000000000000000000000000000000	25.2 1.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2	94 94 52 51 44 90 94 94 95 52 95 95 95 95 95 95 95 95 95 95 95 95 95	84 92 93 51 44 90 85 86 85 85 85 85 85 85 85 85 85 85 85 85 85	2.1 25 44 42 46 22 46 47 47 47 47 47 47 47 47 47 47 47 47 47	726.7 25 14 16 55 45 89 72 126.7 25 45 89 72 92 51 44 90 735.2 84 92 92 55 44 91 92 735.2 84 92 92 55 44 91 91 752.1 85 94 94 52 50 43 91 91 752.1 85 94 94 52 50 44 91 752.2 84 92 92 52 44 92 752.2 84 92 92 52 44 92 752.2 84 92 92 52 44 92 752.2 84 92 92 92 92 92 92 92 92 92 92 92 92 92	\$\frac{47}{50} \frac{126.2}{150} \frac{35}{25} \frac{16}{16} \frac{125}{25} \frac{126}{16} \frac{125}{25} \frac{126}{16} \frac{125}{25} \frac{126}{16} \frac{125}{25} \frac{126}{16} \frac{125}{25} \frac{126}{16} \frac{126}{25} \frac{126}{16} \frac



#### APPENDIX D LABORATORY DATA

# PPA Carbon Bed Inlet Laboratory Data



## **Environment Testing America**

#### **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

ownerf Ackens

courtney.adkins@eurofinset.com

LINKS .....

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www.eurofinsus.com/Env

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

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

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

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Lab Chronicle	14
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Method Summary	20
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Chain of Custody	22

#### **Definitions/Glossary**

Client: The Chemours Company FC, LLC Job ID: 140-22281-1

Project/Site: PPA Carbon Bed Inlet

#### **Qualifiers**

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.
В	Compound was found in the blank and sample.

#### Glossary

These commonly used abbreviations may or may not be present in this report.
Listed under the "D" column to designate that the result is reported on a dry weight basis
Percent Recovery
Contains Free Liquid
Colony Forming Unit
Contains No Free Liquid
Duplicate Error Ratio (normalized absolute difference)
Dilution Factor
Detection Limit (DoD/DOE)
Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
Decision Level Concentration (Radiochemistry)
Estimated Detection Limit (Dioxin)
Limit of Detection (DoD/DOE)
Limit of Quantitation (DoD/DOE)
EPA recommended "Maximum Contaminant Level"
Minimum Detectable Activity (Radiochemistry)
Minimum Detectable Concentration (Radiochemistry)
Method Detection Limit

ML

MPN

MQL

Method Quantitation Limit Not Calculated Not Detected at the reporting limit (or MDL or EDL if shown) ND

Minimum Level (Dioxin)

Most Probable Number

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

**PRES** Presumptive QC **Quality Control** 

**RER** Relative Error Ratio (Radiochemistry)

RLReporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points **RPD** 

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, 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 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 140-47734/3-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.

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Client Sample ID: Z-2635,2636 PPA CB INLET R1 OTM-45 FH Date Collected: 03/11/21 00:00

Lab Sample ID: 140-22281-1

Matrix: Air

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

Method: 537 (modified) - Fluo	rinated Alky	yl Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	193	В	1.99	1.15	ug/Sample		03/22/21 14:10	03/28/21 01:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	106		25 - 150				03/22/21 14:10	03/28/21 01:54	1

03/22/21 14:10 03/28/21 01:54

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

Lab Sample ID: 140-22281-2

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 26.6 **HFPO-DA** \*+ \*1 0.800 0.700 ug/Sample 03/15/21 06:58 03/28/21 00:26 Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 03/15/21 06:58 03/28/21 00:26 103 25 - 150

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 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RL **MDL** Unit 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 Isotope Dilution %Recovery Qualifier Dil Fac Limits Prepared Analyzed 13C3 HFPO-DA 25 - 150 03/23/21 05:53 03/27/21 12:11 113

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 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RI 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 Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 90 25 - 150 03/15/21 06:58 03/28/21 00:35

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

Eurofins TestAmerica, Knoxville

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

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 Date Received: 03/13/21 10:40 Matrix: Air

Sample Container: Air Train

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

03/15/21 06:58 03/28/21 00:44

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

109

106

Lab Sample ID: 140-22281-6

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 %Recovery Qualifier Isotope Dilution Dil Fac Limits Prepared Analyzed

Client Sample ID: Z-2646 PPA CB INLET R2 OTM-45 Lab Sample ID: 140-22281-7

25 \_ 150

**IMPINGERS 1,2&3 COND** 

13C3 HFPO-DA

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 Result Qualifier Analyte

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 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

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 RI **MDL** Unit Prepared Analyzed 0.00160 03/15/21 06:58 03/28/21 00:53 HFPO-DA 0.0190 \*+ \*1 0.00140 ug/Sample Isotope Dilution %Recovery Qualifier Limits Analyzed Dil Fac Prepared 13C3 HFPO-DA \*5-03/15/21 06:58 03/28/21 00:53 22 25 - 150

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

13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RL **MDL** Unit Analyzed Prepared Dil Fac HFPO-DA 1.98 1.15 ug/Sample 03/22/21 14:10 03/28/21 02:29 171 B Isotope Dilution %Recovery Qualifier Limits Analyzed Dil Fac Prepared

25 - 150

Eurofins TestAmerica, Knoxville

03/22/21 14:10 03/28/21 02:29

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#### **Client Sample Results**

Client: The Chemours Company FC, LLC

Job ID: 140-22281-1

Project/Site: PPA Carbon Bed Inlet

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

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) - Fluor	inated Alky	I Substan	ces						
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
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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) - F	<b>luorinated Alky</b>	I Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.314	В	0.105	0.0173	ug/Sample		03/23/21 05:53	03/27/21 12:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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 Alky	l Substan	ces						
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
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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

Job ID: 140-22281-1

Project/Site: PPA Carbon Bed Inlet

#### 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

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#### **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

Lab Sample ID  140-22281-1 140-22281-2 140-22281-3  140-22281-4  140-22281-5 140-22281-6 140-22281-7  140-22281-8	Client Sample ID  Z-2635,2636 PPA CB INLET R1  Z-2637,2638,2640 PPA CB INLET R1 OTM-45 BH  Z-2639 PPA CB INLET R1  OTM-45 IMPINGERS 1,2&3	(25-150) 106 103	
140-22281-1 140-22281-2 140-22281-3 140-22281-4 140-22281-5 140-22281-6 140-22281-7	Z-2635,2636 PPA CB INLET R1 Z-2637,2638,2640 PPA CB INLET R1 OTM-45 BH Z-2639 PPA CB INLET R1 OTM-45 IMPINGERS 1,2&3	106 103	
140-22281-2 140-22281-3 140-22281-4 140-22281-5 140-22281-6 140-22281-7	Z-2637,2638,2640 PPA CB INLET R1 OTM-45 BH Z-2639 PPA CB INLET R1 OTM-45 IMPINGERS 1,2&3	103	
140-22281-3 140-22281-4 140-22281-5 140-22281-6 140-22281-7	INLET R1 OTM-45 BH Z-2639 PPA CB INLET R1 OTM-45 IMPINGERS 1,2&3		
140-22281-4 140-22281-5 140-22281-6 140-22281-7	OTM-45 IMPINGERS 1,2&3	113	
140-22281-5 140-22281-6 140-22281-7	COND		
140-22281-6 140-22281-7	Z-2641 PPA CB INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	90	
140-22281-7	Z-2642,2643 PPA CB INLET R2 OTM-45 FH	106	
	Z-2644,2645,2647 PPA CB INLET R2 OTM-45 BH	109	
140-22281-8	Z-2646 PPA CB INLET R2 OTM-45 IMPINGERS 1,2&3 COND	108	
	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	00	
MB 140-48003/1-B	MICHION DIVIN	92	
Surrogate Legend	Method Blank	92 112	

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Client: The Chemours Company FC, LLC Job ID: 140-22281-1

Project/Site: PPA Carbon Bed Inlet

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

Lab Sample ID: MB 140-47734/14-B	Client Sample ID: Method Blank
Matrix: Air	Prep Type: Total/NA
Analysis Batch: 48219	Prep Batch: 47734

MB MB Analyte Result Qualifier RL **MDL** Unit

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

Lab Sample ID: MB 140-47734/1-B **Client Sample ID: Method Blank** Prep Type: Total/NA **Matrix: Air** 

**Analysis Batch: 48219** MB MB

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 0.00160 03/15/21 06:58 03/27/21 21:20  $\overline{\mathsf{ND}}$ 0.00140 ug/Sample MB MB

Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 45 25 - 150 03/15/21 06:58 03/27/21 21:20

Lab Sample ID: LCS 140-47734/2-B

Matrix: Air

**Analysis Batch: 48219** 

Prep Batch: 47734 Spike LCS LCS %Rec. Analyte Added Result Qualifier I imits Unit %Rec HFPO-DA 0.0200 60 - 140 0.02128 ug/Sample 106

LCS LCS Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 43

Lab Sample ID: LCSD 140-47734/3-B Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA **Matrix: Air** 

Prep Batch: 47734 **Analysis Batch: 48219** LCSD LCSD Spike %Rec. RPD Analyte Added Result Qualifier Unit %Rec Limits RPD Limit HFPO-DA 0.0200 0.03810 \*+ \*1 ug/Sample 190 60 - 140 57

LCSD LCSD %Recovery Qualifier Isotope Dilution Limits 13C3 HFPO-DA 25 - 150 33

Lab Sample ID: MB 140-47984/1-B **Client Sample ID: Method Blank Matrix: Air** Prep Type: Total/NA **Analysis Batch: 48219** Prep Batch: 47984

MR MR

Analyte	Result	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
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HEPO-DA	92		25 - 150				03/22/21 14:10	03/28/21 01:28	1

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3/31/2021

Prep Batch: 47734

Prep Type: Total/NA

Client Sample ID: Lab Control Sample

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

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

**Client Sample ID: Lab Control Sample** Lab Sample ID: LCS 140-47984/2-B **Matrix: Air** Prep Type: Total/NA **Analysis Batch: 48219** Prep Batch: 47984

ug/Sample

Spike LCS LCS %Rec. Result Qualifier Added %Rec Limits Analyte Unit HFPO-DA 0.0200 0.02413 121 60 - 140

LCS LCS

Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 32

Lab Sample ID: LCSD 140-47984/3-B **Client Sample ID: Lab Control Sample Dup** Prep Type: Total/NA

**Matrix: Air** 

**Analysis Batch: 48219** Prep Batch: 47984

Spike LCSD LCSD %Rec. **RPD** Analyte Added Result Qualifier Unit %Rec Limits RPD Limit HFPO-DA 0.0200 0.02295 ug/Sample 115 60 - 140

LCSD LCSD

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

Lab Sample ID: MB 140-48003/1-B Client Sample ID: Method Blank

Matrix: Air

Prep Type: Total/NA **Analysis Batch: 48210** Prep Batch: 48003

MB MB

Analyte Result Qualifier RI **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 0.000500 0.0000825 ug/Sample 03/23/21 05:53 03/27/21 11:45 0.001514 MB MB %Recovery Qualifier Isotope Dilution Limits Prepared Analyzed Dil Fac

13C3 HFPO-DA 25 - 150 03/23/21 05:53 03/27/21 11:45 112

Lab Sample ID: LCS 140-48003/2-B

Prep Type: Total/NA **Matrix: Air** Prep Batch: 48003 **Analysis Batch: 48210** 

LCS LCS Spike %Rec.

Analyte Added Result Qualifier Unit %Rec Limits HFPO-DA 0.0100 0.01114 ug/Sample 111 60 - 140

LCS LCS

Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 112

Lab Sample ID: LCSD 140-48003/3-B Client Sample ID: Lab Control Sample Dup

**Matrix: Air** 

Prep Type: Total/NA **Analysis Batch: 48210** Prep Batch: 48003 Spike LCSD LCSD %Rec. **RPD** 

Added Result Qualifier %Rec Limits RPD Limit Analyte Unit HFPO-DA 0.0100 0.01177 ug/Sample 118 60 - 140

LCSD LCSD

Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 107 25 - 150 **Client Sample ID: Lab Control Sample** 

#### **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 Bł	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 Bł	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

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#### **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 Bł	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 Bł	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 Bł	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 Bł	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 Bł	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

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

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 Date Received: 03/13/21 10:40 Matrix: Air

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

Client Sample ID: Z-2637,2638,2640 PPA CB INLET R1 OTM-45 Lab Sample ID: 140-22281-2

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Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt 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

Date Collected: 03/11/21 00:00 Matrix: Air Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt 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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

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

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 Date Received: 03/13/21 10:40 Matrix: Air

Batch Batch Dil Initial Final Prepared Number Method or Analyzed **Prep Type** Type Run **Factor Amount** Amount Analyst Lab None 47984 03/22/21 14:10 DWS TAL KNX Total/NA Prep 1 Sample 90 mL Total/NA Split 45 mL 48079 03/24/21 09:23 DWS TAL KNX Cleanup 10 mL Total/NA Cleanup Dilution 5 uL 10000 uL 48218 03/27/21 05:30 JRC TAL KNX Total/NA Analysis 537 (modified) 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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt 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

Date Received: 03/13/21 10:40 Batch Batch Dil Initial Final Batch Prepared Method **Factor Amount** or Analyzed **Prep Type** Type Run Amount Number Analyst Lab Total/NA Prep None 0.00513 10 mL 48003 03/23/21 05:53 DWS TAL KNX

Sample Total/NA Cleanup Split 10 mL 10 mL 48146 03/25/21 13:57 DWS TAL KNX Total/NA Analysis 537 (modified) 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

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

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Matrix: Air

Lab Sample ID: 140-22281-10

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

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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

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

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

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

**IMPINGERS 1,2&3 COND** 

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

Гуре	Method	D							
		Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Prep	None			0.00476	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
				Sample					
Cleanup	Split			10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
Analysis	537 (modified)		1			48210	03/27/21 12:29	JRC	TAL KNX
	leanup Analysis	' Cleanup Split	Cleanup Split Analysis 537 (modified)	Cleanup Split Analysis 537 (modified) 1	Sample Cleanup Split 10 mL Analysis 537 (modified) 1	Sample Cleanup Split 10 mL 10 mL Analysis 537 (modified) 1	Sample Cleanup Split 10 mL 48146 Analysis 537 (modified) 1 48210	Sample Cleanup Split 10 mL 10 mL 48146 03/25/21 13:57 Analysis 537 (modified) 1 48210 03/27/21 12:29	Sample Cleanup Split 10 mL 10 mL 48146 03/25/21 13:57 DWS Analysis 537 (modified) 1 48210 03/27/21 12:29 JRC

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

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

Lab Sample ID: 140-22281-12

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

**Client Sample ID: Method Blank** 

Lab Sample ID: MB 140-47734/14-B

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

Matrix: Air

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

Client Sample ID: Method Blank Lab Sample ID: MB 140-47734/1-B

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

Matrix: Air

_ 	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	t 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

Matrix: Air

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	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 Instrumer	537 (modified) nt ID: LCA		1			48219	03/28/21 01:28	JRC	TAL KNX

**Client Sample ID: Method Blank** Lab Sample ID: MB 140-48003/1-B

Date Collected: N/A

Date Received: N/A

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	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 Instrumer	537 (modified) nt ID: LCA		1			48210	03/27/21 11:45	JRC	TAL KNX

**Client Sample ID: Lab Control Sample** Lab Sample ID: LCS 140-47734/2-B

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

Matrix: Air

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

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

**Client Sample ID: Lab Control Sample** 

Lab Sample ID: LCS 140-47984/2-B

Date Collected: N/A Matrix: Air

Date Received: N/A

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	it 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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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 Instrumer	537 (modified)		1			48210	03/27/21 11:54	JRC	TAL KNX

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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-47984/3-B

Date Collected: N/A

Date Received: N/A

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-48003/3-B

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

Matrix: Air

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

#### Laboratory References:

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

Eurofins TestAmerica, Knoxville

3/31/2021

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Matrix: Air

#### **Accreditation/Certification Summary**

Client: The Chemours Company FC, LLC

Project/Site: PPA Carbon Bed Inlet

#### 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	

Job ID: 140-22281-1

 $<sup>^{\</sup>star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$ 

#### **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

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#### **Sample Summary**

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

BREAKTHROUGH XAD-2 RESIN TUBE

Job ID: 140-22281-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Ass
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 BI	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	
40-22281-4	Z-2641 PPA CB INLET R1 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	03/11/21 00:00	03/13/21 10:40	
40-22281-5	Z-2642,2643 PPA CB INLET R2 OTM-45 FH	Air	03/11/21 00:00	03/13/21 10:40	
40-22281-6	Z-2644,2645,2647 PPA CB INLET R2 OTM-45 BI	Air	03/11/21 00:00	03/13/21 10:40	
40-22281-7	Z-2646 PPA CB INLET R2 OTM-45 IMPINGERS 1.2&3 COND	Air	03/11/21 00:00	03/13/21 10:40	
0-22281-8	Z-2648 PPA CB INLET R2 OTM-45 BREAKTHROUGH XAD-2 RESIN TUBE	Air	03/11/21 00:00	03/13/21 10:40	
40-22281-9	Z-2649,2650 PPA CB INLET R3 OTM-45 FH	Air	03/11/21 00:00	03/13/21 10:40	
10-22281-10	Z-2651,2652,2654 PPA CB INLET R3 OTM-45 BI	Air	03/11/21 00:00	03/13/21 10:40	
40-22281-11	Z-2653 PPA CB INLET R3 OTM-45 IMPINGERS 1.2&3 COND	Air	03/11/21 00:00	03/13/21 10:40	
40-22281-12	Z-2655 PPA CB INLET R3 OTM-45	Air	03/11/21 00:00	03/13/21 10:40	

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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		(Review-Released Data)			
	Office: (910) 678-1213					
	Cell: (910) 975-3386					
TestAmerica Project Manager:	Courtney Adkins		Data Package Due Date:	28 Days from Lab Receipt		
	Office: (865) 291-3019					
TestAmerica Program Manager:	Billy Anderson					
	Office: (865) 291-3080					
	Cell: (865) 206-9004					

#### **Analy**

Request for Analysis/Chain-of-Custody – RFA/COC #005

The Chemours Company - Fayetteville NC

	Office: (910) 678-1213 Cell: (910) 975-3386			
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:  The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank,			Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
"MS" = Matrix Spike, "MSD" = Ma "PB" = Proof Blank, "TB" = Trip B	trix Spike Duplicate, "DUP" = Duplicate, ank		Lab Phone Number: Courier:	865.291.3000 Hand Deliver
Project Deliverables:				

**PPA Carbon Bed Inlet** 

Report analytical results on TALS Report form Std\_Tal\_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

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

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require- ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Z-2635 PPA CB Inlet R1 OTM-45 Filter (Combine with Z-2636)	1	3/11/24		250 mL HDPE Wide- Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber)  OTM-45 Train  HFPO-DA & PFOA	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	1	3/11/21		250 mL HDPE Wide- Mouth Bottle	Analysis  Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse  OTM-45 Train	Knoxville: Use this solvent sample in the Filter extraction.
Z-2635)					HFPO-DA & PFOA Analysis	
Z-2637 PPA CB Inlet R1 OTM-45 XAD-2 Resin Tube	1	3/11/24		XAD-2 Resin Tube	XAD-2 Resin Tube OTM-45 Train	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware
140-22281 Chain o	f Custody				HFPO-DA & PFOA Analysis	Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample.  Analyze for HFPO-DA and PFOA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require- ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Z-2638 PPA CB Inlet R1 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse	1	3/11/21		250 mL HDPE Wide- Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction.  Analyze for HFPO-DA and PFOA.
(Combine with Z-2637)				-2	HFPO-DA & PFOA Analysis	
Z-2639 PPA CB Inlet R1 OTM-45 Impingers 1,2 & 3 Condensate	1	3/11/24		1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate OTM-45 Train	Knoxville: Analyze for HFPO-DA and PFOA.
					HFPO-DA & PFOA Analysis	
Z-2640 PPA CB Inlet R1 OTM-45 Impinger Glassware MeOH Rinse	1	3/11/24		250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse  OTM-45 Train	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
(Combine with Z-2637)		,			HFPO-DA & PFOA Analysis	
Z-2641 PPA CB Inlet R1 OTM-45 Breakthrough XAD- 2 Resin Tube	1	3/11/24		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube OTM-45 Train	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction.
					HFPO-DA & PFOA Analysis	Analyze for HFPO-DA and PFOA.
Z-2642 PPA CB Inlet R2 OTM-45 Filter	2	311121		250 mL HDPE Wide- Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber)	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
(Combine with Z-2643)					OTM-45 Train  HFPO-DA & PFOA  Analysis	Filter sample.  Analyze for HFPO-DA and PFOA.
Z-2643 PPA CB Inlet R2 OTM-45 FH of Filter Holder & Probe MeOH Rinse	2	3/11/21		250 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the Filter extraction.
(Combine with Z-2642)					OTM-45 Train  HFPO-DA & PFOA  Analysis	

Request for Analysis/Chain-of-Custody – RFA/COC #005

The Chemours Company – Fayetteville NC

PPA Carbon Bed Inlet

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require- ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Z-2644 PPA CB Inlet R2 OTM-45 XAD-2 Resin Tube	2	3/11/24		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	3/11/24		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	3/11/2		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	3/4/21		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube  OTM-45 Train  HFPO-DA & PFOA	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	3			250 mL	Analysis  Particulate Filter	Knoxville: Spike sample with the
Inlet R3 OTM-45 Filter  (Combine with  Z-2650)	•	3/11/21		HDPE Wide- Mouth Bottle	(82.6 mm Whatman Glass Microfiber) OTM-45 Train	Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Filter sample.
2 2000)					HFPO-DA & PFOA Analysis	Analyze for HFPO-DA and PFOA.

#### ing TestAmerica

#### Request for Analysis/Chain-of-Custody – RFA/COC #005 The Chemours Company – Fayetteville NC **PPA Carbon Bed Inlet**

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Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require- ments	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	3/11/24		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	3/11/2		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	3/11/24		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	3/11/2		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.

### 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/CT082
(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 DELIMBUD ON, DOCHTER ON CHAIL

Custody Tra	nsfer:		
Relinquished By:	Pollul Mame	Ramboll	3 (12/2) (870) Date/Time
Accepted By:	Dony all	ETA KNOX	3/12/2/ 1800 Date/Time
Relinquished By:	Dony Chol	Company ETA KOX	3/13/21 1040
Accepted By:	Name Name	Company C T A Company	Date/Time  3/13/2 / 640  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	xes.	°Z	ž	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	\		`	☐ Containers, Broken	
2. Were ambient air containers received intact?				☐ Checked in lab	
3. The coolers/containers custody seal if present, is it			\	□ Yes	
intact?			\	□ NA	
4. Is the cooler temperature within limits? (> freezing				☐ Cooler Out of Temp, Client	
temp. of water to 6 °C, VOST: 10°C)	\			Contacted, Proceed/Cancel	
Thermometer ID: <b>SC70</b>				☐ Cooler Out of Temp, Same Day	
Correction factor: -03'c	\			Receipt	
5. Were all of the sample containers received intact?	/			☐ Containers, Broken	
6. Were samples received in appropriate containers?				☐ Containers, Improper; Client	
7. Do sample container labels match COC?				□ COC & Samples Do Not Match	
(IDs, Dates, Times)	\			□ COC Incorrect/Incomplete	
	/			☐ COC Not Received	
8. Were all of the samples listed on the COC received?	\			☐ Sample Received, Not on COC	
	\			☐ Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	\			□ COC; No Date/Time; Client	
				Contacted	Labeling Verified by: Date:
10. Was the sampler identified on the COC?				☐ Sampler Not Listed on COC	
11. Is the client and project name/# identified?	//			□ COC Incorrect/Incomplete	pH test strip lot number:
12. Are tests/parameters listed for each sample?	//			☐ COC No tests on COC	
13. Is the matrix of the samples noted?	Ì			□ COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)				□ COC Incorrect/Incomplete	Box 16A: pH   Box 18A: Residual
					Preservation Chlorine
15. Were samples received within holding time?	\			☐ Holding Time - Receipt	Preservative:
16. Were samples received with correct chemical			\	☐ pH Adjusted, pH Included	Lot Number:
preservative (excluding Encore)?				(See box 16A)	Exp Date:
				☐ Incorrect Preservative	Analyst:
17. Were VOA samples received without headspace?			/	☐ Headspace (VOA only)	Date:
18. Did you check for residual chlorine, if necessary?			\	☐ Residual Chlorine	I Ime:
(e.g. 1613B, 1668) Chlorine test strin lot number:					
19 For 1613B water samples is nH<9?				If no notify lab to adjust	
20 For rad camples was cample activity info Drovided?				Decised missing info	
to the samples was sample well in the total and				- 1	
Project #: PM Instructions:					
Sample Receiving Associate:			Date:	Date: 3-13-2)	QA026R32.doc, 062719

### **PPA Carbon Bed Outlet Laboratory Data**



# **Environment Testing America**

### **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

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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

Job ID: 140-22283-1

Project/Site: PPA Carbon Bed Outlet

**Qualifiers** 

**LCMS** 

B Compound was found in the blank and sample.

**Glossary** 

Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent
POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

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#### **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.

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

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Lab Sample ID: 140-22283-1

Lab Sample ID: 140-22283-3

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

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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 Lab Sample ID: 140-22283-2 OTM-45 BH

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
HFPO-DA	1.31	В	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

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac D	Method	Prep Type
HFPO-DA	0.296	В	0.0899	0.0148	ug/Sample		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	В	0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

## Client Sample ID: Q-1965,1966 PPA CB OUTLET R2 OTM-45 Lab Sample ID: 140-22283-5 FH

Analyte	Result Qualif	ier 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 Lab Sample ID: 140-22283-6 OTM-45 BH

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.13	В	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 I	O Method	Prep Type
HFPO-DA	0.365	В	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	В	0.00160	0.00140	ug/Sample	1	_	537 (modified)	Total/NA

## Client Sample ID: Q-1972,1973 PPA CB OUTLET R3 OTM-45 Lab Sample ID: 140-22283-9 FH

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

This Detection Summary does not include radiochemical test results.

4/6/2021

#### **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

Lab Sample ID: 140-22283-10

**OTM-45 BH** 

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

Client Sample ID: Q-1976 PPA CB OUTLET R3 OTM-45 Lab Sample ID: 140-22283-11 **IMPINGERS 1,2&3 COND** 

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

Client Sample ID: Q-1978 PPA CB OUTLET R3 OTM-45 Lab Sample ID: 140-22283-12 **BREAKTHROUGH XAD-2 RESIN TUBE** 

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

This Detection Summary does not include radiochemical test results.

Client: The Chemours Company FC, LLC

Job ID: 140-22283-1

Project/Site: PPA Carbon Bed Outlet

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

Lab Sample ID: 140-22283-1

FΗ

Date Collected: 03/11/21 00:00 Matrix: Air

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

Method: 537 (modified) - Fluor	inated Alky	/I Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	6.21	В	0.100	0.0580	ug/Sample		03/22/21 14:10	03/28/21 03:05	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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 Lab Sample ID: 140-22283-2

**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) - Fluor	inated Alky	I Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.31	В	0.0160	0.0140	ug/Sample	_	03/22/21 09:12	04/02/21 13:44	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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 Lab Sample ID: 140-22283-3

**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) - Fluor	inated Alky	/I Substand	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.296	В	0.0899	0.0148	ug/Sample	_	03/23/21 05:53	03/27/21 13:21	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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 Lab Sample ID: 140-22283-4

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

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Client: The Chemours Company FC, LLC Job ID: 140-22283-1

Project/Site: PPA Carbon Bed Outlet

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

Lab Sample ID: 140-22283-5

FΗ

Date Collected: 03/11/21 00:00 Matrix: Air

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

Method: 537 (modified) - Fluor	inated Alky	I Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	4.02	В	0.0991	0.0575	ug/Sample		03/22/21 14:10	03/28/21 03:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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 Lab Sample ID: 140-22283-6

**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 03/22/21 09:12 04/02/21 15:14 0.0160 0.0140 ug/Sample **HFPO-DA** 10 1.13 В Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 03/22/21 09:12 04/02/21 15:14 13C3 HFPO-DA 98 25 - 150 10

Client Sample ID: Q-1969 PPA CB OUTLET R2 OTM-45 Lab Sample ID: 140-22283-7

**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 0.365 B 0.111 0.0184 ug/Sample 03/23/21 05:53 03/27/21 13:30 Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 107 25 - 150 03/23/21 05:53 03/27/21 13:30

Client Sample ID: Q-1971 PPA CB OUTLET R2 OTM-45 Lab Sample ID: 140-22283-8

**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 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 Isotope Dilution Dil Fac %Recovery Qualifier Limits Prepared Analyzed 13C3 HFPO-DA 03/22/21 09:12 04/01/21 19:24 25 - 150 84

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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

FΗ

Date Collected: 03/11/21 00:00 Matrix: Air

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

Method: 537 (modified) - Fluor	rinated Alky	/I Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.68	В	0.100	0.0580	ug/Sample		03/22/21 14:10	03/28/21 03:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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) - Flu	uorinated Alky	I Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.710	В	0.00800	0.00700	ug/Sample		03/22/21 09:12	04/02/21 14:01	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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) - Fluor	inated Alky	/I Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.333	В	0.0899	0.0148	ug/Sample	_	03/23/21 05:53	03/27/21 13:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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) - Fluor	inated Alky	I Substan	ces						
Analyte	Result	Qualifier	RL	MDL U	Jnit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0192	В	0.00160	0.00140 u	ıg/Sample	_	03/22/21 09:12	04/01/21 19:50	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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 Job ID: 140-22283-1 Project/Site: PPA Carbon Bed Outlet

Method: 537 (modified) - Fluorinated Alkyl Substances

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

			Percent Isotope Dilution Recovery (Acceptance Limits)
		HFPODA	
Lab Sample ID	Client Sample ID	(25-150)	
140-22283-1	Q-1958,1959 PPA CB OUTLET	101	
140-22283-2	Q-1960,1961,1963 PPA CB	98	
	OUTLET R1 OTM-45 BH		
140-22283-3	Q-1962 PPA CB OUTLET R1	102	
	OTM-45 IMPINGERS 1,2&3		
	COND		
140-22283-4	Q-1964 PPA CB OUTLET R1	82	
	OTM-45 BREAKTHROUGH		
140-22283-5	XAD-2 RESIN TUBE Q-1965,1966 PPA CB OUTLET	108	
140-22203-3	R2 OTM-45 FH	100	
140-22283-6	Q-1967,1968,1970 PPA CB	98	
	OUTLET R2 OTM-45 BH		
140-22283-7	Q-1969 PPA CB OUTLET R2	107	
	OTM-45 IMPINGERS 1,2&3		
	COND		
140-22283-8	Q-1971 PPA CB OUTLET R2	84	
	OTM-45 BREAKTHROUGH		
440.00000.0	XAD-2 RESIN TUBE	440	
140-22283-9	Q-1972,1973 PPA CB OUTLET	110	
140-22283-10	R3 OTM-45 FH Q-1974,1975,1977 PPA CB	96	
140-22200-10	OUTLET R3 OTM-45 BH	30	
140-22283-11	Q-1976 PPA CB OUTLET R3	102	
	OTM-45 IMPINGERS 1,2&3		
	COND		
140-22283-12	Q-1978 PPA CB OUTLET R3	85	
	OTM-45 BREAKTHROUGH		
	XAD-2 RESIN TUBE		
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	
Cuma mata 1 a man d			
Surrogate Legend			

HFPODA = 13C3 HFPO-DA

Client: The Chemours Company FC, LLC

Job ID: 140-22283-1

Project/Site: PPA Carbon Bed Outlet

13C3 HFPO-DA

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

Lab Sample ID: MB 140-47947/14-B	Client Sample ID: Method Blank
Matrix: Air	Prep Type: Total/NA
Analysis Batch: 48419	Prep Batch: 47947
MB MB	

		141.0							
Analyte	Result	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
	MB	MB							
Isotope Dilution	%Recovery	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 140-4794 Matrix: Air Analysis Batch: 48419	17/1-B						•	le ID: Method Prep Type: To Prep Batch	otal/NA
	MB	MB							
Analyte	Result	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
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

Lab Sample ID: LCS 140-47947/2-B Matrix: Air Analysis Batch: 48419				Client	Saı	mple ID	D: Lab Control Sam Prep Type: Total Prep Batch: 47	I/NA
7 maryoro Zatom 10 110	Spike	LCS	LCS				%Rec.	•
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
LIEDO DA		0.00400		- 10	_	400		

25 - 150

Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits
HFPO-DA	· ·		0.0200	0.02402		ug/Sample	_	120	60 - 140
	LCS	LCS							
Isotono Dilution	% Pacayory	Qualifier	l imite						

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

89

Lab Sample ID: LCSD 140-	-4/94//3-B					ilent Sam	pie	ID: Lat	Control	Sample	a Dup
Matrix: Air									Prep Ty	pe: Tot	al/NA
Analysis Batch: 48419									Prep E	ا: atch	47947
			Spike	LCSD	LCSD				%Rec.		RPD
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HFPO-DA			0.0200	0.02278		ug/Sample	_	114	60 - 140	5	30
	LCSD	LCSD									

Isotope Dilution	%Recovery	Qualifier	Limits
13C3 HFPO-DA	60		25 - 150

Lab Sample ID: MB 140-47984/1-B							Client Sam	ple ID: Metho	d Blank
Matrix: Air								Prep Type: 1	Total/NA
Analysis Batch: 48219								Prep Batch	ո։ 47984
	MB	MB							
Analyte F	Result	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
	MB	MB						
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		25 - 150			00/00/04 44 40	03/28/21 01:28	

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03/22/21 09:12 04/01/21 17:20

Client: The Chemours Company FC, LLC Job ID: 140-22283-1

Project/Site: PPA Carbon Bed Outlet

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

**Client Sample ID: Lab Control Sample** Lab Sample ID: LCS 140-47984/2-B **Matrix: Air** Prep Type: Total/NA **Analysis Batch: 48219** Prep Batch: 47984

Spike LCS LCS %Rec. Result Qualifier Added %Rec Limits Analyte Unit HFPO-DA 0.0200 0.02413 ug/Sample 121 60 - 140

LCS LCS Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 32

Lab Sample ID: LCSD 140-47984/3-B **Client Sample ID: Lab Control Sample Dup** Prep Type: Total/NA

**Matrix: Air** 

**Analysis Batch: 48219** Prep Batch: 47984 Spike LCSD LCSD %Rec. **RPD** 

Analyte Added Result Qualifier Unit %Rec Limits RPD Limit HFPO-DA 0.0200 0.02295 ug/Sample 115 60 - 140

LCSD LCSD

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

Lab Sample ID: MB 140-48003/1-B Client Sample ID: Method Blank Prep Type: Total/NA Matrix: Air

**Analysis Batch: 48210** Prep Batch: 48003

MB MB

Analyte Result Qualifier RI **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 0.000500 0.0000825 ug/Sample 03/23/21 05:53 03/27/21 11:45 0.001514 MB MB

%Recovery Qualifier Isotope Dilution Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 25 - 150 03/23/21 05:53 03/27/21 11:45 112

Lab Sample ID: LCS 140-48003/2-B **Client Sample ID: Lab Control Sample** Prep Type: Total/NA **Matrix: Air** 

Prep Batch: 48003 **Analysis Batch: 48210** LCS LCS %Rec.

Spike Analyte Added Result Qualifier Unit %Rec Limits HFPO-DA 0.0100 0.01114 ug/Sample 111 60 - 140

LCS LCS

Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 112

Lab Sample ID: LCSD 140-48003/3-B Client Sample ID: Lab Control Sample Dup

**Matrix: Air** Prep Type: Total/NA **Analysis Batch: 48210** Prep Batch: 48003 Spike LCSD LCSD %Rec. **RPD** 

Added Result Qualifier %Rec Limits RPD Limit Analyte Unit HFPO-DA 0.0100 0.01177 ug/Sample 118 60 - 140

LCSD LCSD Isotope Dilution %Recovery Qualifier

Limits 13C3 HFPO-DA 107 25 - 150

4/6/2021

#### **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 Batcl
140-22283-1	Q-1958,1959 PPA CB OUTLET R1 OTM-45 FH	Total/NA	Air	None	<u> </u>
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

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### **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

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

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

Lab Sample ID: 140-22283-1

Lab Sample ID: 140-22283-3

Lab Sample ID: 140-22283-4

FH

Date Collected: 03/11/21 00:00 **Matrix: Air** 

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

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

Lab Sample ID: 140-22283-2

**OTM-45 BH** 

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

Prep Type Total/NA	Batch Type Prep	Batch Method None	Run	Dil Factor	Initial Amount 1 Sample	Final Amount 360 mL	Batch Number 47947	Prepared or Analyzed 03/22/21 09:12	Analyst DWS	- Lab
Total/NA	Cleanup	Split			180 mL	10 mL	48222	03/28/21 06:44	DWS	TAL KNX
Total/NA	Analysis Instrumer	537 (modified) nt ID: LCA		10			48462	04/02/21 13:44	JRC	TAL KNX

Client Sample ID: Q-1962 PPA CB OUTLET R1 OTM-45

**IMPINGERS 1,2&3 COND** 

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00556	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
					Sample					
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
	Instrumer	nt ID: LCA								

Client Sample ID: Q-1964 PPA CB OUTLET R1 OTM-45

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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

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

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

Lab Sample ID: 140-22283-5

FΗ

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

**Client Sample ID: Q-1967,1968,1970 PPA CB OUTLET R2** 

Lab Sample ID: 140-22283-6

Lab Sample ID: 140-22283-7

Lab Sample ID: 140-22283-8

**OTM-45 BH** 

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

Client Sample ID: Q-1969 PPA CB OUTLET R2 OTM-45

**IMPINGERS 1,2&3 COND** 

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00449	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
					Sample					
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
	Instrumer	nt ID: LCA								

Client Sample ID: Q-1971 PPA CB OUTLET R2 OTM-45

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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

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

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

Lab Sample ID: 140-22283-9

FΗ

Date Collected: 03/11/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

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

Prep Type Total/NA Total/NA	Batch Type Prep Cleanup	Batch Method None Split	Run	Pactor	Amount 1 Sample 180 mL	Amount 360 mL 10 mL	<b>Number</b> 47947 48222	Prepared or Analyzed 03/22/21 09:12 03/28/21 06:44		Lab TAL KNX TAL KNX
Total/NA	Analysis Instrumer	537 (modified)		5			48462	04/02/21 14:01	JRC	TAL KNX

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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00556	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
					Sample					
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
	Instrumer	nt ID: LCA								

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

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

**Laboratory References:** 

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

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#### **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

 $<sup>^{\</sup>star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$ 

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#### **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

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#### **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	

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### TestAmerica

**Environment Testing** 

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

Request for Analysis/Chain-of-Custody - RFA/COC #006

The Chemours Company - Fayetteville NC

**PPA Carbon Bed Outlet** 

#### **Laboratory Deliverable Turnaround Requirements:** Analytical Due Date: 21 Days from Lab Receipt (Review-Released Data) 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 Hand Deliver Courier:

#### **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 Require- ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1958 PPA CB Outlet R1 OTM-45 Filter  (Combine with Q-1959)	1	3/14/24		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	3/14/21		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.

Last printed 2/11/2021 8:06

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

(Combine with Q-1965)



**Environment Testing TestAmerica** 

3

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require- ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1961 PPA CB Outlet R1 OTM-45 BH of Filter Holder & Coil Condenser MeOH Rinse	1	3/11/21		250 mL HDPE Wide- Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction.
(Combine with Q-1960)					OTM-45 Train HFPO-DA & PFOA Analysis	Analyze for HFPO-DA and PFOA.
Q-1962 PPA CB Outlet R1 OTM-45 Impingers 1,2 & 3 Condensate	1			1 Liter HDPE Wide-Mouth Bottle	Impinger #1, #2 & #3 Condensate	Knoxville: Analyze for HFPO-DA and PFOA.
		3/11/21			OTM-45 Train HFPO-DA & PFOA Analysis	
Q-1963 PPA CB Outlet R1 OTM-45 Impinger Glassware MeOH Rinse	1			250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
(Combine with Q-1960)		3/11/24			OTM-45 Train HFPO-DA & PFOA Analysis	
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	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction.
					HFPO-DA & PFOA Analysis	Analyze for HFPO-DA and PFOA.
Q-1965 PPA CB Outlet R2 OTM-45 Filter	2	3/11/21		250 mL HDPE Wide- Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber) OTM-45 Train	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
(Combine with Q-1966)					HFPO-DA & PFOA Analysis	Filter sample.  Analyze for HFPO-DA and PFOA.
Q-1966 PPA CB Outlet R2 OTM-45 FH of Filter Holder & Probe MeOH Rinse	2	3/11/21		250 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the Filter extraction.

OTM-45 Train

Analysis

HFPO-DA & PFOA

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

**Environment Testing TestAmerica** 

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require- ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
Q-1967 PPA CB Outlet R2 OTM-45 XAD-2 Resin Tube	2	3/11/24		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(11/2(		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	3/1121		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	3/11/2,		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	3/11/24		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	3/4/21		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.

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



**Environment Testing TestAmerica** 

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require- ments	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	3/11/24		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	3/11/24		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	3/11/24		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	3/11/24		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/u(2)		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.

eurofins

### 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.	_NONS-
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 0.7/(70.4°C
(3) Record any apparent sample loss/breakage.	_ Was-
(4) Record any unidentified samples transported with this shipment of samples:	YONG-
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	HAND OFLINEARY , NO LUSTODY SEALS

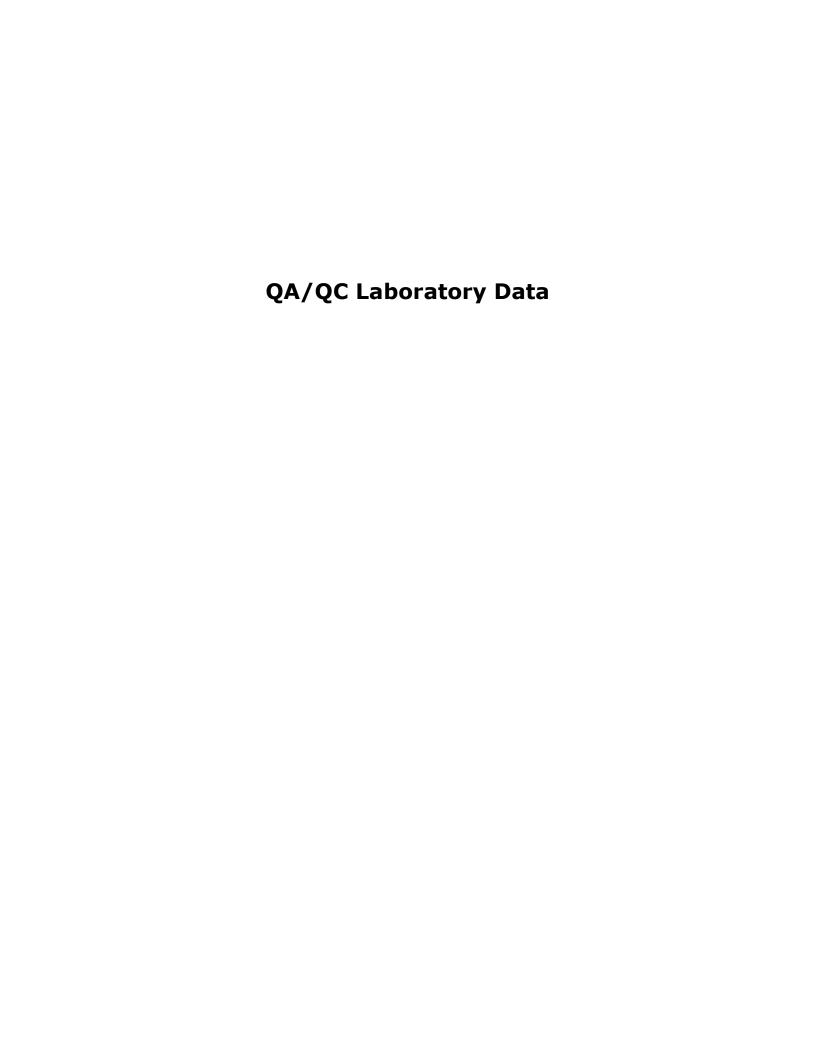
Custody Tra	nsfer:		
			1
Relinquished By:	Cotun Muy	Remboll	3 (12/21/1800
	Name	Company	Date/Time
Accepted By:	Dong Cold	ETA KNOX	3/12/21 1800
	Name	Company	Date/Time
Relinquished By:	Dony louis	ETA KNOX	3/13/21 1040
	, / // Name	Company	Date/Time
Accepted By:	Ken	E 7A	7/17/21 (6/6
	Name	Company	Date/Time
Relinquished By:			
	Name	Company	Date/Time
Accepted By:			
	Name	Company	Date/Time
Relinquished By:			
	Name	Company	Date/Time
Accepted By:			
	Name	Company	Date/Time

1. Are the shipping containers intact?	\		✓ □ Containers, Broken	roken	
2. Were ambient air containers received intact?			☐ Checked in lab		
3. The coolers/containers custody seal if present, is it			/ □ Yes		
intact?		_	□ NA		
4. Is the cooler temperature within limits? (> freezing	\		□ Cooler Out of	Cooler Out of Temp, Client	
temp. of water to 6 °C, VOST: 10°C)	\		Contacted, Proceed/Cancel	eed/Cancel	
Thermometer ID : <b>\$\cein_{10}</b>			☐ Cooler Out of	☐ Cooler Out of Temp, Same Day	
Correction factor: -13.c	/		Receipt	•	
5. Were all of the sample containers received intact?	/		☐ Containers, Broken	roken	
6. Were samples received in appropriate containers?	\	-	Containers, Improper; C	Containers, Improper; Client	
7. Do sample container labels match COC?			□ COC & Samp	COC & Samples Do Not Match	
(IDs, Dates, Times)	\		☐ COC Incorrect/Incomplete	ct/Incomplete	
	\		☐ COC Not Received	eived	
8. Were all of the samples listed on the COC received?	/		☐ Sample Receiv	Sample Received, Not on COC	
			☐ Sample on CC	Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	\		COC; No Date/Time; Client	e/Time; Client	
0000 1, 1 5, 1, 1 1, 1, 1, 1, 0, 1					Labeling Verified by: Date:
10. was the sampler identified on the COC?	1		- 1	Sampler Not Listed on COC	
11. Is the client and project name/# identified?	1		☐ COC Incorrect/Incomplete	ct/Incomplete	pH test strip lot number:
12. Are tests/parameters listed for each sample?	1		☐ COC No tests on COC	on COC	
13. Is the matrix of the samples noted?	//		□ COC Incorrect/Incomplete	ct/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	//		☐ COC Incorrect/Incomplete	ct/Incomplete	Box 16A: pH Box 18A: Residual
15. Were samples received within holding time?			☐ Holding Time - Receipt	- Receipt	
16. Were samples received with correct chemical			DH Adjusted. pH Included	pH Included	Lot Number:
preservative (excluding Encore)?		_	(See box 16A)		Exp Date:
			☐ Incorrect Preservative	servative	Analyst:
17. Were VOA samples received without headspace?		_	☐ Headspace (VOA only)	OA only)	Date:
18. Did you check for residual chlorine, if necessary?			/   Residual Chlorine	rine	Time:
(e.g. 1613B, 1668)		_			
Chlorine test strip lot number:			/		
19. For 1613B water samples is pH<9?			/ 🗆 If no, notify lab to adjust	b to adjust	
20. For rad samples was sample activity info. Provided?		/	☐ Project missing info	g info	
Project #: PM Instructions:					
Sample Receiving Associate:		Ω	Date: 3-13-7		QA026R32.doc, 062719

Loc: 140 **22283** 

Log In Number:

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





# **Environment Testing America**

### **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

Swanuf Acklins

courtney.adkins@eurofinset.com

LINKS .....

Review your project results through

Total Access

**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 Job ID: 140-22287-1

Project/Site: PPA Carbon Bed Field QC

#### **Qualifiers**

		N/	C
L	U	IV	J

Qualifier **Qualifier Description** 

Compound was found in the blank and sample.

#### **Glossary**

Abbreviation These commonly used abbreviations may or may not be present in this repo
---

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

Duplicate Error Ratio (normalized absolute difference) **DER** 

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)

Estimated Detection Limit (Dioxin) **EDL** 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 MLMinimum Level (Dioxin) MPN Most Probable Number Method Quantitation Limit MQL

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** 

Relative Error Ratio (Radiochemistry) **RER** 

Reporting Limit or Requested Limit (Radiochemistry) RL

**RPD** Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) **TEQ** Toxicity Equivalent Quotient (Dioxin)

Too Numerous To Count **TNTC** 

Page 3 of 23

#### **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.

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#### **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 Dil Fac D Method Analyte Result Qualifier MDL Unit **Prep Type** HFPO-DA 537 (modified) 0.00386 B 0.00100 0.000580 ug/Sample 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 Lab Sample ID: 140-22287-3 **COND BT** Analyte Dil Fac D Method Result Qualifier RL MDL Unit **Prep Type** 537 (modified) HFPO-DA 0.00133 B 0.000500 0.0000825 ug/Sample Total/NA Client Sample ID: T-1114 QC OTM-45 PPA CB Lab Sample ID: 140-22287-4 **BREAKTHROUGH XAD-2 RESIN TUBE BT** No Detections. Client Sample ID: T-1115 QC OTM-45 PPA CB DI WATER RB Lab Sample ID: 140-22287-5 Dil Fac D Method Analyte Result Qualifier MDL Unit **Prep Type** HFPO-DA 0.00121 B 0.000500 0.0000825 ug/Sample 537 (modified) Total/NA Client Sample ID: T-1116 QC OTM-45 PPA CB MEOH WITH 5% Lab Sample ID: 140-22287-6 NH4OH RB No Detections. Client Sample ID: T-1117 QC OTM-45 PPA CB COMBINED Lab Sample ID: 140-22287-7 GLASSWARE RINSES (MEOH/5% NH4OH) PB 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 Result Qualifier **MDL** Unit **Analyte** RL Dil Fac D Method **Prep Type** 

0.00100

0.000580 ug/Sample

0.00267 B

HFPO-DA

4/6/2021

537 (modified)

Total/NA

2

3

5

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8

10

12

13

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

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 Date Received: 03/13/21 10:40 . Matrix: Air

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte HFPO-DA	•	Qualifier	RL 0.00100	 Unit ug/Sample	_ <u>D</u>	Prepared 03/22/21 14:10	Analyzed 03/28/21 11:13	Dil Fac
Isotope Dilution 13C3 HFPO-DA	%Recovery	_	<b>Limits</b> 25 - 150	3"		Prepared 03/22/21 14:10	Analyzed 03/28/21 11:13	Dil Fac

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

A	nalyte FPO-DA	•	Qualifier	RL 0.00160	MDL 0.00140	Unit ug/Sample	<u>D</u>	Prepared 03/23/21 14:37	Analyzed 04/01/21 21:44	Dil Fac
_	otope Dilution BC3 HFPO-DA	%Recovery 80	Qualifier	<b>Limits</b> 25 - 150				Prepared 03/23/21 14:37	Analyzed 04/01/21 21:44	Dil Fac

Client Sample ID: T-1112 QC OTM-45 PPA CB IMPINGER 1,2&3 Lab Sample ID: 140-22287-3

**COND BT** 

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

moundar our (moundar)		. oanota.							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00133	В	0.000500	0.0000825	ug/Sample	_	03/23/21 05:53	03/27/21 14:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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

Lab Sample ID: 140-22287-4

**BREAKTHROUGH XAD-2 RESIN TUBE BT** 

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	KL	MDL	Unit	ט	Prepared	Analyzea	DII Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample	_	03/23/21 14:37	04/01/21 21:53	1
	~								D# E
Isotope Dilution	%Recovery	Qualitier	Limits				Prepared	Analyzed	Dil Fac

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

Mothod:	<b>537</b>	modified)	- Eluorinator	LAlley	<b>Substances</b>
- wemoa:	อง/ เ	moanieai	- Fiuorinalec	I AIKVI	Substances

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

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Job ID: 140-22287-1

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

Client Sample ID: T-1116 QC OTM-45 PPA CB MEOH WITH 5% Lab Sample ID: 140-22287-6

NH4OH RB

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		
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
13C3 HFPO-DA	91		25 - 150				03/23/21 14:37	04/01/21 22:02	1		

Lab Sample ID: 140-22287-7 Client Sample ID: T-1117 QC OTM-45 PPA CB COMBINED

GLASSWARE RINSES (MEOH/5% NH4OH) PB

Date Collected: 03/09/21 00:00 Matrix: Air

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

Method: 537 (modified) - Flu	orinated Alky	I Substan	ces						
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
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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 Matrix: Air

Date Collected: 03/09/21 00:00

Date Received: 03/13/21 10:40 **Sample Container: Air Train** 

Method: 537 (modified	l) - Fluorinated Alky	/I Substan	ces						
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
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
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) - F	Fluorinated Alky	/I Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00267	В	0.00100	0.000580	ug/Sample		03/22/21 14:10	03/28/21 11:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	83		25 - 150				03/22/21 14:10	03/28/21 11:22	1

4/6/2021

# **Isotope Dilution Summary**

Client: The Chemours Company FC, LLC Job ID: 140-22287-1 Project/Site: PPA Carbon Bed Field QC

# Method: 537 (modified) - Fluorinated Alkyl Substances

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

		HFPODA	Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	(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	

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Client: The Chemours Company FC, LLC Job ID: 140-22287-1

Project/Site: PPA Carbon Bed Field QC

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

Lab Sample ID: MB 140-47984/14-B	Client Sample ID: Method Blank
Matrix: Air	Prep Type: Total/NA
Analysis Batch: 48219	Prep Batch: 47984
MR MR	

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

Lab Sample ID: MB 140-47984/1-B Client Sample ID: Method Blank Prep Type: Total/NA **Matrix: Air** 

**Analysis Batch: 48219** 

Prep Batch: 47984 MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 03/22/21 14:10 03/28/21 01:28 0.002562 0.00100 0.000580 ug/Sample MB MB

Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 92 25 - 150 03/22/21 14:10 03/28/21 01:28 Lab Sample ID: LCS 140-47984/2-B

Client Sample ID: Lab Control Sample Matrix: Air Prep Type: Total/NA **Analysis Batch: 48219** Prep Batch: 47984

Spike LCS LCS %Rec. Analyte Added Result Qualifier I imits Unit %Rec HFPO-DA 0.0200 60 - 140 0.02413 ug/Sample 121

LCS LCS Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 32

Lab Sample ID: LCSD 140-47984/3-B Client Sample ID: Lab Control Sample Dup **Prep Type: Total/NA Matrix: Air** Prep Batch: 47984 **Analysis Batch: 48219** LCSD LCSD **RPD** Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits RPD Limit HFPO-DA 0.0200 0.02295 115 ug/Sample 60 - 140 LCSD LCSD

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

Client Sample ID: Method Blank Lab Sample ID: MB 140-48003/14-B **Matrix: Air Prep Type: Total/NA Analysis Batch: 48210** Prep Batch: 48003 MB MB

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

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

Isotope Dilution

Job ID: 140-22287-1

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

%Recovery Qualifier

Lab Sample ID: MB 140-48003/1-B	Client Sample ID: Method Blank
Matrix: Air	Prep Type: Total/NA
Analysis Batch: 48210	Prep Batch: 48003
MB MB	

Analyte	Result	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
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	112		25 - 150				03/23/21 05:53	03/27/21 11:45	1

Lab Sample ID: LCS 140- Matrix: Air Analysis Batch: 48210	48003/2-B					Client	Sai	mple ID	: Lab Control Samp Prep Type: Total/N Prep Batch: 480
			Spike	LCS	LCS				%Rec.
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits
HFPO-DA	·		0.0100	0.01114		ug/Sample	_	111	60 - 140
	LCS	LCS							
Isotope Dilution	%Recovery	Qualifier	Limits						
13C3 HFPO-DA	112		25 - 150						

Lab Sample ID: LCSD 140-48003/3 Matrix: Air Analysis Batch: 48210	В			(	Client Sam	ple	ID: Lak	Control Prep Ty Prep E	pe: Tot	al/NA
-		Spike	LCSD	LCSD				%Rec.		RPD
Analyte		Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HFPO-DA		0.0100	0.01177		ug/Sample	_	118	60 - 140	6	30
LC	SD LCSD									

13C3 HFPO-DA	107	25 - 150	
Lab Sample ID: MB 140-480	51/1-B		Client Sample ID: Method Blank
Matrix: Air			Pron Type: Total/NA

Limits

**Analysis Batch: 48419** Prep Batch: 48051 MB MB

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 21:18	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	93		25 - 150				03/23/21 14:37	04/01/21 21:18	1

Lab Sample ID: LCS 140- Matrix: Air Analysis Batch: 48419	48051/2-B					Client	Sa	mple ID	Prep Type: Total/NA Prep Batch: 48051	
-			Spike	LCS	LCS				%Rec.	
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	
HFPO-DA			0.0200	0.02171		ug/Sample	_	109	60 - 140	
	LCS	LCS								
Isotope Dilution	%Recovery	Qualifier	Limits							
13C3 HFPO-DA	76		25 - 150							

# **QC Sample Results**

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

Job ID: 140-22287-1

# Method: 527 (modified) Electricated Alleyl Substa

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

Lab Sample ID: LCSD 140-48051/3-B	Client Sample ID: Lab Control Sample Dup							<b>Dup</b>	
Matrix: Air						Prep Ty	pe: Tot	al/NA	
Analysis Batch: 48419						Prep E	atch: 4	18051	
-	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEDO DA	0.0200	0.02001		ua/Comple	_	105	60 140		20

Analyte			Added	Result	Qualifier	Unit	ט	%Rec	Limits	RPD
HFPO-DA			0.0200	0.02091		ug/Sample	_	105	60 - 140	4
	LCSD	LCSD								
Isotope Dilution	%Recovery	Qualifier	Limits							
13C3 HFPO-DA	78		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% NF	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

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# **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

Job ID: 140-22287-1

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

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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt 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

Batch Batch Batch Dil Initial Final Prepared Method **Prep Type** Type Run **Factor Amount** Amount Number or Analyzed Analyst Lab Total/NA Prep None 360 mL 48051 03/23/21 14:37 DWS TAL KNX 1 Sample Total/NA Cleanup Split 180 mL 10 mL 48224 03/28/21 10:17 DWS TAL KNX Total/NA Analysis 537 (modified) 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 Lab Sample ID: 140-22287-3

**COND BT** 

Date Collected: 03/09/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
						Allalyst	Lab
		1 Sample	10 mL	48003	03/23/21 05:53	DWS	TAL KNX
		10 mL	10 mL	48146	03/25/21 13:57	DWS	TAL KNX
	1			48210	03/27/21 14:23	JRC	TAL KNX
		1	•		10 mL 10 mL 48146	10 mL 10 mL 48146 03/25/21 13:57	10 mL 10 mL 48146 03/25/21 13:57 DWS

Client Sample ID: T-1114 QC OTM-45 PPA CB Lab Sample ID: 140-22287-4

**BREAKTHROUGH XAD-2 RESIN TUBE BT** 

Date Collected: 03/09/21 00:00

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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

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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

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Matrix: Air

Job ID: 140-22287-1

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

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

Lab Sample ID: 140-22287-6

NH4OH RB

Date Collected: 03/09/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt ID: LCA								

Client Sample ID: T-1117 QC OTM-45 PPA CB COMBINED

Lab Sample ID: 140-22287-7

**GLASSWARE RINSES (MEOH/5% NH4OH) PB** 

Date Collected: 03/09/21 00:00 Matrix: Air

Date Received: 03/13/21 10:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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
	Instrumer	nt 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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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

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

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	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

#### **Laboratory References:**

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

Eurofins TestAmerica, Knoxville

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# **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

 $<sup>^{\</sup>star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$ 

Eurofins TestAmerica, Knoxville

# **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

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# **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
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

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

<b>eurofins</b>	Environment Testini TestAmerica	

Project Identification:	Chemours Emissions Test
Client Name:	The Chemours Company FC, LLC
Client Contact:	Christel Compton
	Office: (910) 678-1213
	Cell: (910) 975-3386
TestAmerica Project Manager:	Courtney Adkins
	Office: (865) 291-3019
TestAmerica Program Manager:	Billy Anderson
	Office: (865) 291-3080
	Cell: (865) 206-9004
4 1 4 1 5 4 6 6 6	

#### **Analytical Testing QC Requirements:**

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

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

#### **Project Deliverables:**

Report analytical results on TALS Report form Std\_Tal\_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

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

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require- ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
T-1108 QC OTM-45 PPA CB Filter BT	QC	3/9/21	Blank Train	250 mL HDPE Wide- Mouth Bottle	Particulate Filter (82.6 mm Whatman Glass Microfiber)  OTM-45 Blank Train	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
(Combine with T-1109)					HFPO-DA & PFOA Analysis	PFOA.
T-1109 QC OTM-45 PPA CB FH of Filter Holder & Probe MeOH Rinse BT	QC	39124	Blank Train	250 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the Filter extraction.
(Combine with T-1108)					OTM-45 Blank Train	
					Analysis	



140-22287 Chain of Custody

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Last printed 2/11/2021 8:00

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

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eu	ru		5

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require- ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
T-1110 QC OTM-45 PPA CB XAD-2 Resin Tube BT	QC	3/9/24	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	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	3/9/2	Blank Train	1 Liter HDPE Wide-Mouth Bottle	Analysis 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.

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# 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 Require- ments	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	Knoxville: Analyze for HFPO-DA and PFOA.
					HFPO-DA & PFOA Analysis	
T-1116 QC OTM-45 PPA CB MeOH with 5% NH <sub>4</sub> OH RB	QC	3/9/21	Reagent Blank	250 mL HDPE Wide- Mouth Bottle	Methanol with 5% NH₄OH Reagent Blank	Knoxville: Analyze for HFPO-DA and PFOA.
		219121			HFPO-DA & PFOA Analysis	
T-1117 QC OTM-45 PPA CB Combined Glassware Rinses (MeOH/5% NH <sub>4</sub> OH)	QC	3/9/21	Proof Blank	250 mL HDPE Wide- Mouth Bottle	Front Half, Back Half and Impinger Glassware Rinses Proof Blank	Knoxville: Analyze for HFPO-DA and PFOA.
РВ		31914			Composite OTM-45 Train	
					HFPO-DA & PFOA Analysis	

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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):	HAWD DEHVARED, NO CUSTODY SCARL

Custody Tra	nsfer:		,
Relinquished By:	Name of	Pamboil Company	3 (12/2) / 1860 Date/Time
Accepted By:	Dow Cliff Name of M	ETA KWOX Company	3/12/21 1800 Date/Time
Relinquished By:	Downland	ETA KNOX	3/13/21 1048 Date/Time
Accepted By:	Name	Company	Date/Time  Date/Time
Relinquished By:			
Accepted By:	Name	Company	Date/Time
	Name	Company	Date/Time
Relinquished By:	Name	Company	Date/Time
Accepted By:	Name	Company	Date/Time
	ivairie	Company	Date/Time

Log In Number:

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

Review Items	Yes	No.	¥.	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	\			☐ Containers, Broken	
2. Were ambient air containers received intact?				☐ Checked in lab	
3. The coolers/containers custody seal if present, is it				□ Yes	
intact?				□ NA	
4. Is the cooler temperature within limits? (> freezing	1			☐ Cooler Out of Temp, Client	
	\			Contacted, Proceed/Cancel	
- 1				☐ Cooler Out of Temp, Same Day	
Correction factor: -0.3.C				Receipt	
5. Were all of the sample containers received intact?	\			☐ Containers, Broken	
6. Were samples received in appropriate containers?				☐ Containers, Improper; Client	
7. Do sample container labels match COC?		1		Confidence, r Toceed/Cancel	
(IDs, Dates, Times)	\			COC & Samples Do Not Maten	
				□ COC Not Received	
8. Were all of the samples listed on the COC received?				☐ Sample Received, Not on COC	
9. Is the date/time of sample collection noted?	\			□ COC; No Date/Time; Client	
				Contacted	Labeling Verified by: Date:
10. Was the sampler identified on the COC?				☐ Sampler Not Listed on COC	
11. Is the client and project name/# identified?	<u> </u>			☐ COC Incorrect/Incomplete	pH test strip lot number:
12. Are tests/parameters listed for each sample?	//			☐ COC No tests on COC	
13. Is the matrix of the samples noted?				☐ COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)				☐ COC Incorrect/Incomplete	H Box
15. Were samples received within holding time?	\			Holding Time - Receipt	Preservative:
16. Were samples received with correct chemical				□ pH Adiusted, pH Included	Lot Number:
preservative (excluding Encore)?				(See box 16A)	Exp Date:
				☐ Incorrect Preservative	Analyst:
17. Were VOA samples received without headspace?				☐ Headspace (VOA only)	Date:
18. Did you check for residual chlorine, if necessary?			\	☐ Residual Chlorine	lime:
(e.g. 1613B, 1668)					
19 For 1613B water samples is nH<9?			1	If no notify lab to adjust	
20. For rad samples was sample activity info. Provided?				Project missing info	
P4 W.				8	
Project #: PM Instructions:					
Sample Receiving Associate:			Date.	Date: 22/2:31	OA026B22 422 062710
3			.1	7000	ÇAVEOLO E. GOÇÎ 19

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# APPENDIX E 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.
- 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.

METE	DATE:	1/8/2021	CF	RITICA		ER SERIAL #: ET SERIAL #:	MB 8	BAROMETRIC PRESSURE (in Hg): 30.05 AVG (P <sub>bar</sub> ) 30.05 30.05													<del>.</del>
		К'	TESTED	-					TI	EMPER/	ATURES	°F		ELAPSED					Y % Diff	Y % Diff	
		FACTOR	VACUUM		DGI	VI READINGS (	FT <sup>3</sup> )	AMBIENT	DGM	INLET	рем о	UTLET	DGM	TIME (MIN)	DGM ∆H	(1)	(2)	(3)	to	with other	
ORIFICE	# RUN#	(AVG)	(in Hg)		INITIAL	FINAL	NET (V <sub>m</sub> )		INITIAL	FINAL	INITIAL	FINAL	AVG	θ	(in H <sub>2</sub> O)	V <sub>m</sub> (STD)	V <sub>cr</sub> (STD)	Υ	Average Y	orifices	$\Delta H_{@}$
	_			Г					l	1	ı	1	I								
	1	0.306		L			.0						0								
11	2	0.306	23	L	297.964	306.208	8.244	78	77	78	76	77	77	20.00	0.43	<u>8.1511</u>	7.9310	0.973			1.52
	3	0.306					.0						0								
	7			Г					l		l		Ī				AVG =	0.973	0.74	1.23	
16	1	0.4268		ŀ			.0						0								
16	2	0.4268	22	-	306.212	312.009	5.797	79	78	79	77	78	78	10.00	0.84	5.7267	<u>5.5259</u>	0.965			<u>1.53</u>
	3	0.4268		L			.0						0				AVG =	0.965	-0.10	0.39	
	٦ ,	0.4961		Г			.0						o				A	0.505	-0.10	0.55	
18				ŀ																	
'`	2	0.4961	21	-	312.016	319.456	7.440	80	79	80	78	78	78.75	11.00	1.1	7.3442	<u>7.0589</u>	<u>0.961</u>			<u>1.48</u>
<u> </u>	3	0.4961		L			.0						0				AVG =	0.961	-0.49	-0.20	
	1	0.7131		Ī			.0						0								
26	2	0.7131	18	ŀ	319.485	329.159	9.674	81	79	82	78	79	79.5	10.00	2.5	9.5688	9.2155	0.963			1.64
-	3	0.7131	10	-	319.403	329.139	.0	01	13	62	70	15	0	10.00	2.5	3.3000	9.2133	0.303			1.04
	`	0.7131		L			.0		l		l		U				AVG =	0.963	-0.29	0.20	
	<b>1</b> ₁	0.8358					.0						0								
31	2	0.8358	17		329.170	340.453	11.283	82	81	84	79	79	80.75	10.00	3.4	11.1588	10.7912	0.967			1.62
	3	0.8358		Ī	020.110	5.0.400	.0	02	J.	57			0	. 3.00	3.4	1000		<u>5.561</u>			
<u> </u>				L		1			l	1	l		1 -				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,  $V_{rr}$  (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.966

AVERAGE ΔH<sub>@</sub> = 1.56

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

= Net volume of gas sample passed through DGM, corrected to standard conditions  $K_1 = 17.64$  °R/in. Hg (English), 0.3858 °R/imm Hg (Metric)

T<sub>m</sub> = Absolute DGM avg. temperature (°R - English, °K - Metric)

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

(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 ( ${}^{\circ}$ R - English,  ${}^{\circ}$ K - Metric)

K' = Average K' factor from Critical Orifice Calibration

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

= DGM calibration factor

#### METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



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

			_								_	INITIAL	FINAL	AVG (P <sub>bar</sub> )						
	DATE:	1/12/2021	MB10	BAROMETRI C PRESSURE (in Hg): 29.83 29.83 29.83																
METE	R PART #:		CR	ITICAL ORIFICE	SET SERIAL #:	1393														
																ı				
		к'	TESTED					TE	MPERA	TURES	°F		ELAPSED					Y % Diff	Y % Diff	
		FACTOR	VACUUM	DG	M READINGS	(FT³)	AMBIENT	DGM I	NLET	DGM O	UTLET	DGM	TIME (MIN)	DGM DH	(1)	(2)	(3)	to	with other	
ORIFICE	# RUN #	(AVG)	(in Hg)	INITIAL	FINAL	NET (V <sub>m</sub> )		INITIAL	FINAL	INITIAL	FINAL	AVG	q	(in H <sub>2</sub> O)	V <sub>m</sub> (STD)	V <sub>cr</sub> (STD)	Υ	Average Y	orifices	DH⊚
	_					_														
	1	0.306																		
11					2/7.244								40.50	2.15	70//0					4.50
	2	0.306	23	259.927	267.844	7.917	67	71	70	71	70	70.5	19.50	0.45	7.8662	<u>7.7559</u>	0.986			<u>1.59</u>
	3	0.306				]														
	7					1										AVG =	0.986	0.28	0.29	
	1	0.4268																		
16	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	
	1	0.4961	21																	
18		0.4961		400.043	204.754	6.541	.,			.,		// DE	10.00	4.0	/ 5/50	( 4544	0.000			4.7/
	2			198.213	204.754	6.541	66	66	67	66	66	66.25	10.00	1.3	6.5652	6.4544	0.983			<u>1.76</u>
	3	0.4961				J										****				
	7					1										AVG =	0.983	-0.01	0.36	
	1	0.7131				1														
26	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	
	1	0.8358																		
31	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	0.074			1 74
			18	280.055	291.180	11.125	- 66	/0	12	70	/0	70.5	10.00	3.1	<u>11.1420</u>	10.8740	<u>0.976</u>			<u>1.76</u>
<u> </u>	3	0.8358				J														
LISING T	HE CRITICA	AL ODIFICES AS	CALIBRATIC	NI STANDADDS:												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.

0.983 AVERAGE DRY GAS METER CALIBRATION FACTOR, Y

AVERAGE DH<sub>@</sub> = 1.71

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

= Net volume of gas sample passed through DGM, corrected to standard conditions

 $K_1 = 17.64$   $^{\circ}R/in$ . Hg (English), 0.3858  $^{\circ}K/mm$  Hg (Metric) T<sub>m</sub> = Absolute DGM avg. temperature (°R - English, °K - Metric)

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

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

= Volume of gas sample passed through the critical orifice, corrected to standard conditions  $T_{amb} = Absolute ambient temperature (<math>{}^{o}R - English, {}^{o}K - Metric)$ 

K' = Average K' factor from Critical Orifice Calibration

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

= DGM calibration factor

#### **Initial Oven Box Thermocouple Calibration**

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

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



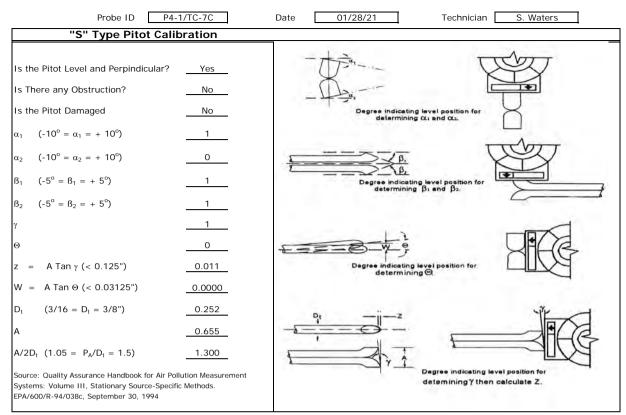
#### Initial Impinger Outlet Thermocouple Calibration

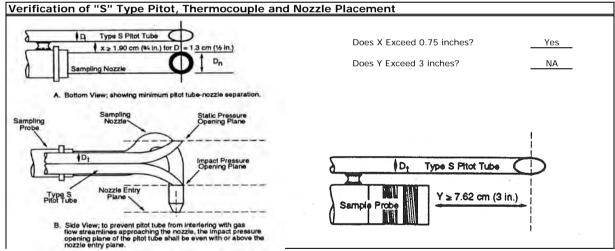
		Ice Bath			Ambient		He				
	Reference	Thermocouple		Reference	Thermocouple		Reference	Thermocouple			
ID Number	Temperature	Temperature	Deviation*	Temperature	Temperature	Deviation*	Temperature	Temperature	Deviation*	Technician	Date Performed
	(°Rk)	(°Rk)		(°Rk)	(°Rk)		(°Rk)	(°Rk)			renomied
IO-1	494.17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

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



#### **Initial Sample Probe Calibration Form**





#### Thermocouple Calibration Ice Bath <sup>0</sup>R Ambient <sup>O</sup>R Boiling Water <sup>0</sup>R Reference Temp 492 492 492 526 526 672 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

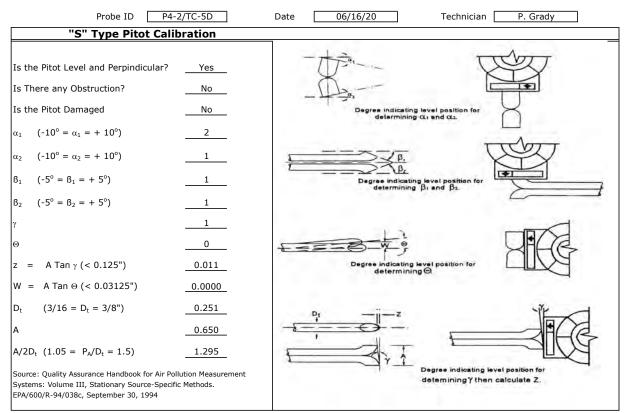
Temperature values must be within 1.5% of reference temperature

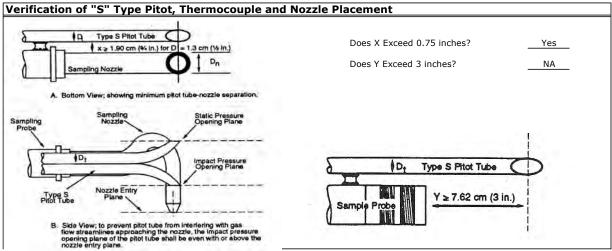
I certify that the probe IE P4-1/TC-7C meets or exceeds all specifications, criteria and/or applicable design features and is herby assigned a pitot tube calibration factor  $C_P$  of 0.84.

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



#### **Initial Sample Probe Calibration Form**





Thermocouple Calibra	tion								
		Ice Bath <sup>0</sup>	R	/	Ambient <sup>0</sup>	R	Boi	ling Water	r <sup>o</sup> 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 IE  $\underline{\hspace{0.2cm}}$  P4-2/TC-5D  $\underline{\hspace{0.2cm}}$  meets or exceeds all specifications, criteria and/or applicable design features and is herby assigned a pitot tube calibration factor  $C_P$  of 0.84.

Certified By: \_\_\_\_\_ P. Grady \_\_\_\_ Date: \_\_\_\_06/16/20

# **Post Test Equipment Calibration Data**

#### POST TEST DRY GAS METER CALIBRATION

DATE: TECHNICIAN:		CRITICA	ME AL ORIFICE SET	BARON	METRIC	PRESSU	IRE (ir		30.13	30.13	AVG (P <sub>bar</sub> ) 30.13							
ORIFICE # RUN #									URES °		DGM AVG	ELAPSED TIME (MIN)	DGM DH (in H₂O)	(1) V <sub>m</sub> (STD)	(2) V <sub>cr</sub> (STD)	(3) Y	Y % Diff to Average Y	DH⊚
1 2 3																		
1 18 2 3	0.4961 0.4961 0.4961	22 22 22	782.817 789.520 796.215	789.520 796.215 802.896	6.703 6.695 6.681	65 65	69 69 68	69 68 68	69 69	69 69	69 68.75 68.5	10.00 10.00 10.00	1.1 1.1 1.1	6.7566 6.7518 6.7408	AVG = <u>6.5255</u> <u>6.5255</u> <u>6.5255</u>	0.966 0.966 0.968	-0.10 -0.03 0.13	1.46 1.47 1.47
1 2 3															AVG =	0.967		
							AVE	RAGE	E DR	Y G	AS ME	TER CALI	BRATIC	ON FACT	AVG = OR, Y =	0.9	967	
					F	PRE-DE	TERN	/II NE	D DF	RY G	AS ME	TER CALI	IBRATI	ON FAC	ΓOR, Y =		975	
												Р	ERCEN	T DIFFE	RENCE =	-(	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

TECHN	DATE: 03/17/21 METER BOX #: 10 BAROMETRIC PRESSURE (in Hg): 30.05 30.05 30.05  TECHNICIAN: S. Milo CRITICAL ORIFICE SET SERIAL #: 1393																		
ORIFICE #	RUN #		NLET			DGM AVG	ELAPSED TIME (MIN)	DGM DH	(1) V <sub>m</sub> (STD)	(2) V <sub>cr</sub> (STD)	(3) Y	Y % Diff to Average Y	DH⊚						
	1 2 3															AVG =			
26	1 2 3	0.7131 0.7131 0.7131	19 19 19	796.328 805.802 815.296	805.802 815.296 824.793	9.474 9.494 9.497	67 68 68	68 69 70	69 70 71	68 69 69	68 69 70	68.25 69.25 70	10.00 10.00 10.00	2.7 2.7 2.7	9.5753 9.5774 9.5668	9.3372 9.3284 9.3284 AVG =	0.975 0.974 0.975 0.975	0.04 -0.08 0.03	1.76 1.76 1.76
	1 2 3															AVG =			
								AVE	RAG	E DR	Y G	AS ME	ΓER CALI	BRATIC	ON FACT	OR, Y = [	0.9	975	]
PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 0.983														983	]				
PERCENT DIFFERENCE = -0.8													Р	ERCEN	T DIFFE	RENCE =	-(	0.8	]