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SOURCE EMISSIONS TESTING OF THE VINYL ETHERS SOUTH 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 Vinyl Ethers South (VES) process area to determine carbon bed replacement frequency.

The source emissions test program was performed on September 1, 2020. Messrs. Patrick Grady, Jeff Sheldon, Eric Alongi, Brian Goodhile and Antonio Anderson 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 VES process.

2.1 Process Description

VES is part of the fluoromonomer area at the Fayetteville facility. This area produces fluorocarbon compounds used to produce Chemours products, such as Nafion® Krytox® and Viton®. Indoor air fugitive emissions from VES are vented to a carbon bed which is then vented to atmosphere through a process stack (NEP-Hdr2).

2.2 Operating Conditions During Testing

Source emissions testing was performed during normal operations of the VES 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 VES 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 36-inch inside diameter (ID) carbon bed inlet duct are located approximately 35 inches (1.0 diameters) downstream of a bend and approximately 41 inches (1.1 diameters) upstream of another bend. Test ports in the 41½ -inch ID carbon bed outlet stack are located approximately 12½ feet (3.6 diameters) downstream of a bend and approximately 31 feet (8.9 diameters) upstream from another bend. A total of 12 traverse points were sampled on each diameter during each test run for a total of 24 traverse points at each test location. Traverse points were located in accordance with USEPA RM 1. 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[®] combustion analyzer. A grab sample was collected and introduced into the Fyrite[®] for O_2 and CO_2 analysis.

4.5 Moisture Content

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

4.6 HFPO-DA Emissions

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

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

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

4.6.1 HFPO-DA Sample Train and Equipment Preparation

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

- 1. Wash all glassware, brushes, and ancillary tools with low residue soap and hot water.
- 2. Rinse all glassware, brushes, and ancillary tools three (3) times with D.I. H_2O .

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

4.6.2 HFPO-DA Sample Train Recovery

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

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

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

5. EMISSIONS TEST RESULTS

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

5.1 Emission Test Results

Table 1 presents a detailed summary of the HFPO-DA test results. HFPO-DA concentrations at the carbon bed inlet ranged from 3.59E-03 mg/dscm to 6.12E-02 mg/dscm and averaged 2.28E-02 mg/dscm. Corresponding mass emissions of HFPO-DA ranged from 2.43E-04 lb/hr to 4.28E-03 lb/hr and averaged 1.59E-03 lb/hr.

Concentrations of HFPO-DA at the carbon bed outlet ranged from 2.08E-03 mg/dscm to 4.62E-03 mg/dscm and averaged 3.16E-03 mg/dscm. Mass emission rates of HFPO-DA from the carbon bed outlet ranged from 1.29E-04 lb/hr to 2.86E-04 lb/hr and averaged 1.95E-04 lb/hr. The resulting average HFPO-DA removal efficiency of the VES carbon bed was 88 percent.

A review of Table 1 indicates that HFPO-DA emissions at the carbon bed inlet were significantly lower during Runs 2 and 3. It should be noted that HFPO-DA emissions for Run 2 from the carbon bed outlet were similar to the carbon bed inlet (2.43E-04 lb/hr at the inlet vs. 2.86E-04 lb/hr at the outlet). There were no sampling issues or leak check problems of the sampling trains during any of the test runs. All glassware was prepared in accordance with the procedures list in Section 4.6.1. Note the glassware and equipment used to sample at the VES carbon bed was used the day previous for testing of the Polymer Process Aid (PPA) carbon bed. All equipment and glassware used to sample the PPA carbon bed inlet was used to sample the carbon bed inlet of VES. Similarly, the equipment used to sample the PPA carbon bed outlet was used to sample the VES carbon bed outlet. The decreased removal efficiency from the carbon bed during Runs 2 and 3 can be attributed to the lower fugitive emissions during these test runs.

5.2 Discussion and Conclusion

As previously mentioned in Section 5.1, there were no sampling or process operating problems encountered during the field testing that impacted the test results. Therefore, all test data are believed to be representative of actual emissions in evidence during the test program.

6. QUALITY ASSURANCE/QUALITY CONTROL

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

6.1 Equipment Calibration

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

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

6.2 Equipment Leak Checks

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

6.3 Reagent Blanks and Field Blanks

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

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

Reagent blanks of the 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. The field blank train was collected during test Run 1. The proof blank was collected following completion of Run 1. Results of the field blank, proof blank and reagent blanks and are included with the laboratory reports in Appendix D.

6.4 Test Data and Report Review

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

TABLES

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

Run Identification	Run 1 ª	Run 2	Run 3	Average	Run 1 ª	Run 2	Run 3	Average
Source ID:	<u>C</u>	arbon Bed Inl	<u>et</u>		<u>Ca</u>	arbon Bed Out	<u>let</u>	
Run Date Start/Stop Time	01Sep20 0843-1040	01Sep20 1124-1317	01Sep20 1402-1555		01Sep20 0843-1040	01Sep20 1124-1317	01Sep20 1402-1555	
Exhaust Gas Conditions Temperature (deg. F) Moisture (volume %) Oxygen (dry volume %) Carbon Dioxide (dry volume %)	79 2.5 20.9 0.0	83 2.8 20.9 0.0	87 2.1 20.9 0.0	83 2.5 20.9 0.0	86 2.2 20.9 0.0	91 2.3 20.9 0.0	92 2.0 20.9 0.0	90 2.2 20.9 0.0
<u>Volumetric Flow Rate</u> acfm dscfm	19,615 18,668	19,227 18,083	19,617 18,464	19,486 18,405	17,477 16,602	17,577 16,541	17,291 16,289	17,448 16,477
<u>HFPO - Dimer Acid</u> mg/dscm lb/hr	6.12E-02 4.28E-03	3.59E-03 2.43E-04	3.70E-03 2.56E-04	2.28E-02 1.59E-03	2.08E-03 1.29E-04	4.62E-03 2.86E-04	2.77E-03 1.69E-04	3.16E-03 1.95E-04
<u>Carbon Bed Removal Efficiency</u> percent	97	NA	34	88				

^aTest results for Run 1 do not include analytical data from the breakthrough XAD module.

APPENDIX A PROCESS OPERATING DATA

 Date
 9/1/2020

 Time
 800
 900
 1000

 Stack Testing
 RUN 1: 0843 - 1040
 VES Product

 VES Precursor
 VES Precursor

VES Condensation (HFPO)

VES ABR (East)

VES ABR (West)

VES Refining

Date 9/1/2020
Time

Time				12	200		13	00
Stack Testing			RUN 2: 1	124-1317				
VES Product								
VES Precursor								
VES Condensation (HFPO)								
VES ABR (East)								
VES ABR (West)								
VES Refining								

Date	9/1/2020											
Time			1	400			15	00		16	500	
Stack Testing					RUN 3: 1	402-1555						
VES Product						PM,	/PE					
VES Precursor												
VES Condensation (HFPO)												
VES ABR (East)		Bur	nout									
VES ABR (West)												
VES Refining												

APPENDIX B SCHEMATICS OF THE TEST LOCATIONS

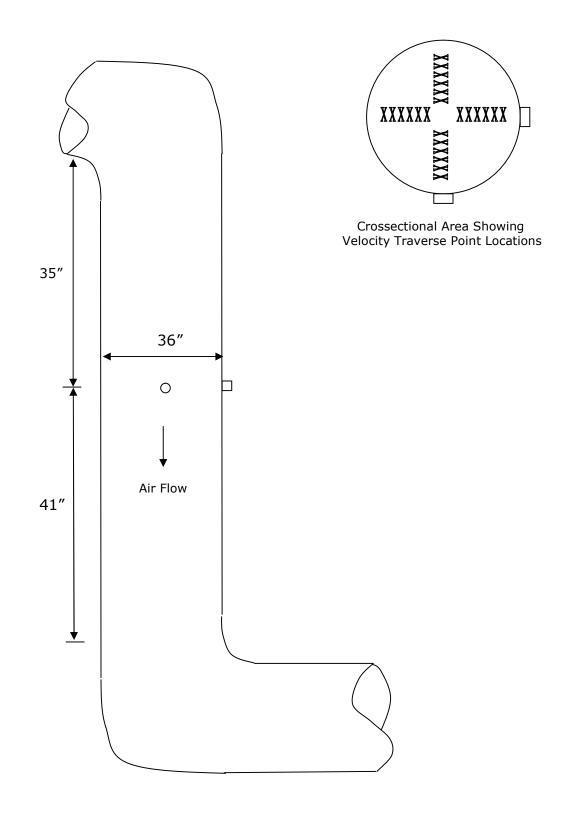


Figure 1
Carbon Bed Inlet Sampling Location
Vinyl Ethers South
The Chemours Company
Fayetteville, North Carolina

Sample Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: VES Carbon Bed Inlet

Stack Diameter: 36 inches

Sampling Locations: 1.0 diameters downstream

1.1 diameters upstream

Minimum Number of Traverse points

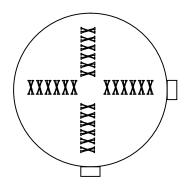
as specified by EPA Method 1: 24

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	2.4
3	11.8	4.2
4	17.7	6.4
5	25.0	9.0
6	35.6	12.8
7	64.4	23.2
8	75.0	27.0
9	82.3	29.6
10	88.2	31.8
11	93.3	33.6
12	97.9	35.0

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





Crossectional Area Showing Velocity Traverse Point Locations

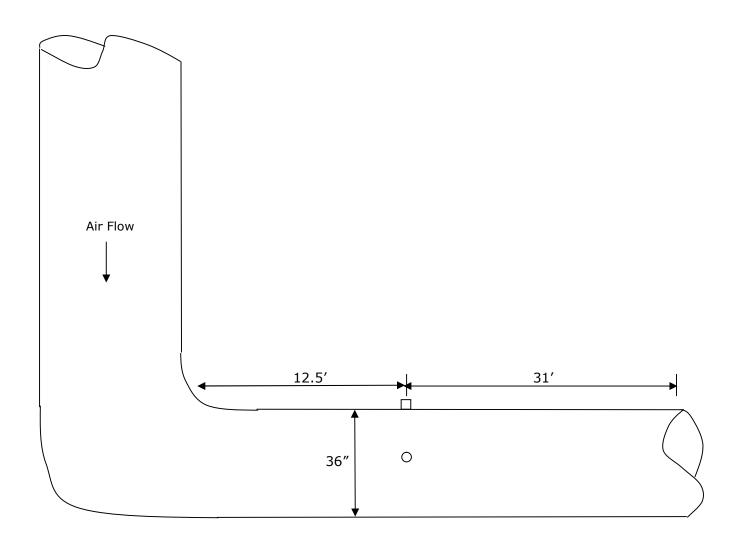


Figure 2
Carbon Bed Outlet Sampling Location
Vinyl Ethers South
The Chemours Company
Fayetteville, North Carolina

Sample Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: <u>VES Carbon Bed Outlet</u>

Stack Diameter: 41.5 inches

Sampling Locations: 3.6 diameters downstream

8.9 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	2.8
3	11.8	4.9
4	17.7	7.3
5	25.0	10.4
6	35.6	14.8
7	64.4	26.7
8	75.0	31.1
9	82.3	34.2
10	88.2	36.6
11	93.3	38.7
12	97.9	35.0

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



APPENDIX C FIELD DATA AND CALCULATIONS

VES Carbon Bed Inlet Field Test Data

Field Data Summary The Chemours Company - Fayetteville Works Vinyl Ethers South 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	78	1.10	3.08	76	76	1.0488	83	0.84	2.35	87	87	0.9165	86	1.10	3.08	96	96	1.0488
2	78	1.00	2.80	77	77	1.0000	82	0.84	2.35	88	88	0.9165	86	1.05	2.94	97	97	1.0247
3	78	0.96	2.68	77	77	0.9798	82	0.80	2.24	88	88	0.8944	86	0.98	2.74	97	97	0.9899
4	78	1.00	2.80	77	77	1.0000	82	0.82	2.29	88			86	0.98	2.74	97	97	0.9899
5	78	0.95	2.66	78	78	0.9747	82	0.80	2.24	88			86	0.91	2.54	97	97	0.9539
6	78	0.90	2.52	78	78	0.9487	82	0.78	2.18	88			87	0.88	2.46	98	98	0.9381
7	78	0.82	2.29	79	79	0.9055	82	0.67	1.87	89			86	0.55	1.54	98	98	0.7416
8	78	0.57	1.59	79	79	0.7550	82	0.59	1.65	89	89		87	0.38	1.06	98	98	0.6164
9	78	0.36	1.00	79	79	0.6000	82	0.50	1.40	89			87	0.36	1.00	99	99	0.6000
10	78 78	0.26	0.72	80 80	80 80	0.5099	82 83	0.52	1.45 1.34	90			87	0.31	0.86	99 99	99	0.5568
11 12	78 78	0.23	0.64	81	81	0.4796 0.4472	83	0.48 0.47	1.34	90 90			87 87	0.24	0.67 0.64	99	99 99	0.4899 0.4796
B1	78 78	0.20	2.46	82	82	0.4472	83	1.10	3.08	90	92		87	0.23	2.43	99	99	0.4796
2	79	0.87	2.43	83	83	0.9327	84	0.99	2.77	93	9:		88	0.87	2.43	99	99	0.9327
3	79	0.80	2.43	83	83	0.8944	84	0.99	2.77	93	9:		88	0.83	2.43	99	99	0.9327
4	79	0.80	2.24	83	83	0.8944	84	0.98	2.74	94			88	0.81	2.26	99	99	0.9000
5	79	0.75	2.10	84	84	0.8660	84	0.93	2.60	94	94		88	0.77	2.15	99	99	0.8775
6	79	0.75	2.10	84	84	0.8660	84	0.84	2.35	95			88	0.75	2.10	99	99	0.8660
1 7	79	0.63	1.76	84	84	0.7937	85	0.53	1.48	95	9:		88	0.68	1.90	99	99	0.8246
8	79	0.57	1.59	85	85	0.7550	85	0.38	1.06	95	9!	0.6164	87	0.62	1.73	99	99	0.7874
9	79	0.54	1.51	85	85	0.7348	85	0.24	0.67	96			87	0.55	1.54	99	99	0.7416
10	79	0.50	1.40	86	86	0.7071	85	0.24	0.67	96	96		87	0.57	1.59	99	99	0.7550
11	79	0.48	1.34	86	86	0.6928	85	0.22	0.61	96			87	0.46	1.28	99	99	0.6782
12	80	0.50	1.40	86	86	0.7071	85	0.20	0.56	96	96	0.4472	87	0.44	1.23	99	99	0.6633
l i						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000						0.0000						0.0000
						0.0000					_	0.0000						0.0000
					-	0.0000					<u> </u>	0.0000						0.0000
1			-		-	0.0000					_	0.0000						0.0000
1					\rightarrow	0.0000					\vdash	0.0000						0.0000
1						0.0000					 	0.0000						0.0000
						0.0000					\vdash	0.0000				\vdash		0.0000
						0.0000						0.0000					\vdash	0.0000
						0.0000					\vdash	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	79	0.68	1.91	81	81	0.8096	83	0.66	1.84	92	92	0.7897	87	0.67	1.89	98	98	0.8042



Test Data Summary and Calculations The Chemours Company - Fayetteville Works **Vinyl Ethers South 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, so.ft.	9/1/20 0843-1040 96 0.23 0.84 1.013 1.73 36 0 0	9/1/20 1124-1317 96 0.23 0.84 1.013 1.73 36 0	9/1/20 1402-1555 96 0.23 0.84 1.013 1.73 36 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	742.212 814.423 72.211 78.5 81.3 1.91 0.8096	29.98 -2.4 814.857 886.008 71.151 83.3 91.6 1.84 0.7897	29.98 -2.4 886.187 959.142 72.955 87.0 98.4 1.89 0.8042
Moisture Data Volume of water collected, mls Silica Gel, grams Total Collected, mls ORSAT Data	22.4 17.2 39.6	18.8 24.4 43.2	13.8 18.4 32.2
%02 %CO2 %CO	20.90	20.90	20.90
Vw(std), scf = Vm(std), dscf = Bws= Md= Ms= Vs, ft/sec = Qs, acfm = Qs(std), dscfm = Isokinetic Sampling Rate, %	1.864 71.826 0.025 28.84 28.56 46.2 19,615 18,668 98.2	2.033 69.438 0.028 28.84 28.53 45.3 19,227 18,083 98.0	1.516 70.342 0.021 28.84 28.61 46.3 19,617 18,464 97.2

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 Vinyl Ethers South Carbon Bed Inlet Fayetteville, North Carolina

Parameter:			Ru	ın 1			Ru	ın 2			R	un 3			A	/erage	
	Mol. Wt.	mg	mg/dscm	<u>ppm</u>	<u>lb/hr</u>	mg	mg/dscm	<u>ppm</u>	<u>lb/hr</u>	mg	mg/dscm	<u>ppm</u>	lb/hr	mg	mg/dscm	ppm	<u>lb/hr</u>
HFPO - Dimer Acid	330	0.12449	6.12E-02	4.46E-03	4.28E-03	0.00706	3.59E-03	2.62E-04	2.43E-04	0.00736	3.70E-03	2.69E-04	2.56E-04	0.05	2.28E-02	1.66E-03	1.59E-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: $lb/hr = pounds \ of \ pollutant \ emitted \ per \ hour = ma/1000/f(453.59 \ a/lb)/(dscf)l \ x \ dscfm \ x \ 60 \ min/hr \ a/lb/hr = pounds \ of \ pollutant \ emitted \ per \ hour = ma/1000/f(453.59 \ a/lb)/(dscf)l \ x \ dscfm \ x \ 60 \ min/hr \ a/lb/hr = pounds \ of \ pollutant \ emitted \ per \ hour = ma/1000/f(453.59 \ a/lb)/(dscf)l \ x \ dscfm \ x \ 60 \ min/hr \ a/lb/hr = pounds \ of \ pollutant \ emitted \ per \ hour = ma/1000/f(453.59 \ a/lb)/(dscf)l \ x \ dscfm \ x \ 60 \ min/hr \ a/lb/hr = pounds \ of \ pollutant \ emitted \ per \ hour = ma/1000/f(453.59 \ a/lb)/(dscf)l \ x \ dscfm \ x \ 60 \ min/hr \ a/lb/hr = pounds \ of \ pollutant \ emitted \ per \ hour = ma/1000/f(453.59 \ a/lb)/(dscf)l \ x \ dscfm \ x \ 60 \ min/hr \ a/lb/hr = pounds \ of \ pollutant \ a/lb/hr = pounds$



Example Calculations

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

Note: Values are shown for example purposes only.

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

Initial gas meter volume: 742.212
Final gas meter volume: 814.423
Difference: 72.211

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

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

= $17.647 \times 0.000 \times 1.013 \times (29.98 + [(1.730 /13.6)) / 541$

= 71.826

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

impinger catch (mls): 22

silica gel (g) 17.2 total: 39.6

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

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

 $= 0.04707 \times 39.6$

= 1.864

Bwo = Proportion by volume of water vapor in gas stream

= Vw,std/(Vw,std+Vm,std)

= 1.86 / (1.86 + 71.826)

= 0.025

Ps = Stack gas static pressure (in. Hg)

= St/13.6

= -2.50 / 13.6

= -0.184

Pa = Absolute stack gas pressure (in. Hg)

= Ps+Pbar

= -0.184 + 29.98

= 29.80

MFD = Dry mole fraction of stack gas

= 1-Bwo

1 - 0.025

= 0.975

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

 $= (0.32 \times \%O2) + (0.44 \times \%CO2) + (0.28 \times \%N2)$

= (0.32 x 20.90)+(0.44 x 0.00) + (0.28 x 79.10)

= 28.84

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

 $= (Md) \times (MFD) + (0.18) \times (Bwo*100)$

= 28.84 x 0.975 + 0.18 x 2.52946

= 28.56

Example Calculations

The Chemours Company - Fayetteville Works Vinyl Ethers South 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 0.81 x sqrt ( 0.63)
             46.2
Α
           Cross sectional areas of stack (sq. ft)
         = pi/4*d^2
         = 3.14159/4 \times 3.00 ^2
             7.07
           Volumetric flow rate at actual conditions (acfm)
Qa
         = (60) sec/min(A)(Vs, avg)
                     x 7.0686 x 46.24
             60
         = 19,613
Ostd
           Volumetric flow rate at standard conditions (scfm)
         = Qa \times (528/Ts,avg + 460) \times Pa/29.92
             19,613 x ( 528 / 539 ) x 0.996
              19,151
         Volumetric flow rate at dry standard conditions per minute(dscfm)
Qstd,dry
         = Qstd x (1-Bwo)
         = 19,151 x
                         0.9747
         = 18,666
mg/dscm HFPO-DA concentration
         = (mg/dscf) \times 35.314 \text{ cu. ft./cu. meter}
       = ( 0.124 / 71.83 ):35.314
         = 6.12E-02
lb/hr
           HFPO-DA Mass Emission Rate
         = mg/1000/[(453.59 g/lb)/(dscf)] \times dscfm \times 60 min/hr
```

= 0.124 / 1,000 / [453.59] / 71.83] x 18,668 x

RAMBOLL

= 4.28E-03

60

EPA Isokinetic Field Sheet

5	Pitot	+	7	3	>		ita (vol)	Final							ita (gm)	Final				Gain	ml.	gm		Total			ata	Tare					nt Data (%	CO ₂			
Leak Check Rates	mple	in. cfm	0.008		5000		Impinger Data (vol)	# Initial	2	m	4	2	9		Silica Gel Data (gm)	# Initial	1	2		Moisture Gain							Filter Data	# Number	1	2	3		10lecular Weight Data (%	# O ₂	1	2	23
Pe	01	-	Initial	Z X			- A 16	Comments/Notes																									5				
	0.84	1			NA			Vacuum Co (in. hg)	4	6	5	9	9	9	9	5	7	5	6	6	1	1	1	1	1	1	_	7	7	1	1	1					
7.6.7	i i	2-1-1	0	701	100			Meter V Outlet (210	17	11	1.1	26	32	26	19	66	80	80)@	28	23	83	BB	64	100	84	es	83	BC	96	99					
mber	efficient	1.D.	x I.D.	Impinger Out I.D	p I.D.		I emperature Readings in Degrees Farenheit	Meter	10	21	22	17	192	36	, S	62	62	8	80	18	28	63	83		300	64	34	35	80	86	86	380					
Pitot Number	Pitot Coefficient	Stack TC I.D.	Oven Box I.D.	Impinger Ot Nozzle Size	XAD Trap I.D	0	Degrees	Aux	19	200	SS	S	53	45	53	55	SS	56	54	25	19	563	61	52	33	24	52	53	2	23	63	560					
					617	11	adings in	Impinger	67	est	35	99	59	15	3	8	G	20	62	50)	67	47	48	Si	52	54	S	53	55	154	55	53					
	ches	co.	١٠.	2	3		ature Re	Oven	28		250		50	83	633	83	82	82	82	82	82	8	82	85	83	82	28	82	200	83	23	83					
/	m	S. 29.98	25.5	172	1,013	1	lemper	Probe	37	82	83	200	28	28	82	22	28	28	200	8.5	82	82	82	28	82	28	8	28	000	20	30	300					
mber	Stack Diameter	Barometric Pres.		SOX #	Meter Gamma			Stack		28	26	20	28	38	20	78	78	38	20	78	28	29	36	29	28	19	19	79	79	54.	36	000					
Run Number		Barome	Static	Meter delta H			Meter	Volume (ft²)	742,212	1	2.825	753,3	756.9	260.5	0.47	1	210.2	772.4	274.3	me.1	777.701	1	184.4	788.0	791.2	794.5	797.8	B00,7	Į	ŧ	١	11118	1	814,423			
Company	اوا			25	0701 38 00		Oritice	Setting (in. H ₂ 0)	3.08	2.6	2.68	2.8	2,60	2.52	7.29	1.59	(10	0.72	0.64	0.56	2.46	2.43	2.24	7.24	2.1	21	1.76	1,59	1.51	۲٠/	1.34	1:4					
The Chemours Company	Fayetteville, NC	VES Inlet	9/1/20	BUS/ 9	1			Head (in. H ₂ O)	4 /1/	8 1.0	12 0,96	16 1.0	20 0.95	4 0.90	8 0.82		36 0.36		4 6,23	8 6.20	2 0,88		0 0.85	4 0.80	8 0.75	2 0,75	6 0.63	0.57	4 0.54	8 0,5	2 6.48	5 0,5					
Client Th	-	e.	Date	Operators Start Time	End Time		0)	Point Time (min)	A1	2	3 1.	4 10	5 2	6 24	7 28	8 32	9 3(10 40	11 44	12 48	B1 52	2 56	3 60	4 64	5 68	6 72	7 76	8 80	9 84	10 88	11 92	12 96					



EPA Isokinetic Field Sheet

Si	Pitot	+	1		1	ata (vol)	Final								ata (gm)	Final				Gain	ml.	gm		Total			ata	Tare					ht Data (%	CO ₂			
Leak Check Rates	Sample Rate	cfm	6.00.0		3000	Impinger Data (vol)	Initial				53				Silica Gel Data	Initial				Moisture Gain							Filter Data	Number					10 lecular Weight Data (%	02			
Leak	Sa	in.	10		7	L	#		2	0	4	5	9			#	П	2				_	_		_			#	1	2	n		10/	#	1	7	c
			Initial	Mid	Final		Comments/Notes														4	2.77 12															
	0.84	2	7	20	NA		Vacuum	(in. hg)	6	5	5	9	9	٥	6	2	5	7	7	W	00	1	7	1	7	7	5	4	8	2	5	7					
7-57		2-17	680	130			Meter		63	88	88	88	86	88	86	40	68	20	06	20	52	13	53	60	24	53	28	256	36	73	26	25					
nber	fficient	I.D.	x I.D.	Out I.D	1.D.	Farenhe	Meter	Inlet	81	86	86	88	96	800		88	80	06	30	20	26	93	93	24	25	3.5	25	55	93	26	96	25					
Pitot Number	Pitot Coefficient	Stack TC I.D.	Oven Box I.D.	Impinger Out I.D Nozzle Size	XAD Trap I.D.	Degrees		Aux	00	503	7		SS	58	5.5	54	8	00	-1	25	5	2	23	28	53	53	15	53	S	Se	55	200					
7					4-78	Temperature Readings in Degrees Farenheit		ımpınger	67	00	lod	3	101	25	58	55	23	8	29	SB	ee	55	2.5	S	56	7	SS	57	23	09	65	09					
	ies	æ	5/	2	20	ture Rea	Oven ,		6.1		61	80	-	83	81	06	20	88	20	20	203	83	88	89	<u>م</u>	. 2	63	88	98	90	53	33					
7	36-in	29.96	2	1.73	1.013	empera	Odoro	Probe	Be	6.8	2.00	Be	83	88		88	æ 0.	83	13	26	3	ã	-					80		689	68	60					
nber	ameter	ric Pres.	essure	ox #	amma		Chack	Stack	83	82	82	22	80	200	28	87	85	85	83	83	83	ã	200	3	BA	70	85	88:	8	SE	85	88					
Run Number		Barometric	Static Pressure	Meter box # Meter delta H	Meter Gamma	Meter	Volume	(ft²)	504.857	1.818	821.7	825.0	1	836.7	838.0	838.1	1	343.6	Sule-2	848.9	85 1.450	855.5	851,2	502.9	5(90)0	870.3	8339	876.5	878.9	1	882.5	1	800,008				
Company	اں		I	52	77	Orifice	Setting	(in. H ₂ O)	2.35	2:35	7.24	2.24	2.24	2.18	1.87	1,65	114	1.45	1.34	1.31	3,08	かまか	11.7	2.74	6,60	55:2	04.1	90/7	100	6163	0.61	0.50				1	
The Chemours Company	Fayetteville, NC	VES Inlet	11/20	1124 / 12	1112 113	Velocity		(in. H ₂ O)	1800				-	0.78	000	0,50	0.50	250	800	140	111	0.99	6,0	0,75	0,83	C. 54	0.53	0,38	620	6.24	2710	0.20					
The	Faye	VES	1	1	1.1			_	4	80	12	412.1	-		28	32	36	40	44	48	52	26	09	64			9/	80	84	88	92	96					
Client	Location	Source	Date	Operators Start Time	End Time	Sample Sample	Point		A1	2	3	4	2	9	7	8	6	10	11	12	B1	2	0	4	2	9	7	8	6	10	11	12	N.			1	



EPA Isokinetic Field Sheet

Leak Check Rates	Sample Rate Pitot in. cfm + -	0			9 0,610 1/1	Impinger Data (vol)	# Initial Final	2 2 2	6	4	2	9	Silica Cal Data (mp)	# Initial Final		2		Moisture Gain	æ.	mb		Total			Filter Data	# Number Tare	1	2	m		Nolecular Weight Data (%	# O ₂ CO ₂	1	2
Ц		Initial	Mid	PiW	Final		Comments/Notes	886.187-V																										
~	0.84	7.	1-0-	230	NA		Vacuum (in. hg)	5	5	0	e	9	d	1	3	7	7	1	0	9	0)	2	e	2	0	0	9	0	1	7				
江	2.00	8	1	4		eit	Meter	26	63	63	63	23	33	8	55	63	8	29	16	88	53	66	25	29	53	200	44	66	25	33				
ımber	Pitot Coefficient Stack TC I.D.	ox I.D.	Impinger Out I.D	Size	ap I.D.	S Farenhe	Meter	95	23	4	25	25	200	2	8	36	36	66	35	8	33	55	33	29	35	66	62	55	29	66				
Pitot Number	Pitot Coefficie Stack TC I.D.	Oven Box I.D.	Impinge	Nozzle Size	XAD Trap I.D.	Degrees	Aux	00	29	3	25	53	20	18	rs	55	25	5	50	100	AF 47	35	6	13	200	97	24	49	2	R				
						Temperature Readings in Degrees Farenheit	Impinger	68	lolo	ios	esi	3	200	SS	69	64	105	69	39	9	CT	79	Se	20	2	35	33	Se	30	2				
	hes	h'		5	200	ature Re	Oven	93	63	23	55	1	20	16			13	60	13	06	13	26	23	2	63	10	77	23	23	53				
	36-inches	-2	5	1.7	101	Tempera	Probe	63	16	20	18	0	200	8	80	90	03	36	15	12	25	75	25	44	44	22	50	23	73	7.5				
mber	Stack Diameter Barometric Pres.	ressure	# xo	elta H	amma		Stack	86	8	80	30	200	000	8	87	18	87	87	B	8	8	86	as d	200	00	200	0	67	2	83		,		
	Stack Dian Barometric	Static Pressure	Meter Box	Meter delta H	Meter Gamma	Meter	Volume (ft³)	SS16.185	689.9	823.9	847,6	510	908	94.3	413.7	916.0	1.81)	921.687	925.0	288	1.285	935.6	238.5	746,6	7.500	7.06	157.5	1	456.7	010	457.142		
Company			1	2	5	Orifice	Setting (in. H ₂ 0)	3.08	2.94	2.74	277	757	がたら	1,00	1,0	0.80	0.67	300	2.43	2.43	2.32	2,26	2	7.7		1.13	201	157	1.60	1.23				
The Chemours Company	Fayetteville, NC VES Inlet	2/1/20	=4 44	1705	201 18	Velocity	Head (in. H ₂ O)	1,1			200	\top	0000	0.38		0.51	0.24	0.23	1810	0.83	0.83	0,81	077	0:15	0.08	2000	500	057	940	600				
Cyl.				4	e 143	Sample Sample	Time (min)	4	8	12	16	200	28	32	36	40	44	48		26	9	64	89	7/	9/	80	10	88	76	96			1	
Client	Location	Date	Operators	Start Time	End Time	Sample	Point	A1	2	3	4 1	0	0 1	8	6	10	11		B1	2	n	4	2	0 1	,	∞ σ	7	10	11	12			+	

3



Sample Train Recovery Data Sheet

	Final ml or gm	Initial ml or gm	Net Gain	
	C147-		22.6	Filter #1 _ 0000
npinger #1	519-0	491,6	-2.6	
npinger #2	72960	737.0	-1.2	Filter #2
npinger #3 npinger #4	502 X	1499.2	3.10	Filter #3
npinger #5	886-6	869.4	17.2	111551 1115
npinger #6				(Two
npinger #7				Run Start Time
npinger #8		-		10000
		Total Gain		Run End Time 1040
		Total Gain	ml/g	Recovery Technician P. Grady
Run # R	L			
		-		
	Final ml or gm	Initial ml or gm	Net Gain	
	100		12-7	Filter #1 MODIO
npinger #1	486-8	461.4	19-4	
mpinger #2	765.6	769.6	-40	Filter #2
mpinger #3 mpinger #4	524.0	519.0	-100	Filter #3
mpinger #5	870.0	850.6	24.49	Titles #3
mpinger #6				27.5
mpinger #7		1		Run Start Time 112
mpinger #8		-		12
				Run End Time 1317
		Total Gain	ml/s	gm
				Recovery Technician P. Grady
0-				
Run # 23	<u></u>			
	Final ml or gm	Initial ml or gm	Net Gain	44.00
0.000	5134	1199.3	12/	Filter #1 MODIC
npinger #1 npinger #2	754.4	759-8	-24	Filter #2
mpinger #2	742.6	142.2	0.4	intel #2
mpinger #4	532.0	328.9	3.2	Filter #3
mpinger #5	781-6	769.2	18.4	
npinger #6	7-7-1	-	1	100
npinger #7	-		·	Run Start Time 140
npinger #8	(-	Dun Sad Time IECO
		Total Gain	ml/g	Run End Time 1655

Nozzle Calibration Form

Plant I.D.	CHEMOURS		Project No.		
Source I.D.	VESOUTH	OUTLET	Personnel	B6-	
	Date	8/31/20			

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

< 0.004" between high & low diameters



Cyclonic Flow Determination Data Sheet

32" 2 402

			Leak Ck Int. Post	~	V
Client	CHEMOURS	Stack Diameter	Barometric Pressure		
Location	FAVETTE VILLE NO	Upstream Distance	Probe ID	PS	1.
Source	INET VES	Downstream Distance	Velocity Guage ID	F2	4
Date	8.31.20	Minimum Traverse Points	Static Pressure		
Operator	ILS	Port Collar Length	Time		
	Anala	25" 10G	KTE.		

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (⁰ F)	Angle at Null
1	2	.95		
2	2	98	-	
3	2	.97		108
4	3	.97		109
5	8	.95		105
6	10	.82		105
7	10	.55		108
8	5	. 30		101
9	4	,30		101
10	18	,32		101
11	4	. 28		tol
12	12	,26		(88)
1	1	. 78	•	
2	2	.85		
3	3	.85		101
3	7	.85		
5	10	.80		
6	10	,80		
7	4	68		104
8	5	.66		
9	5	.64		
10	5	.60		
ч	15	.58		108
12	18	,50		

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (^o F)	Angle at Null
1				
2				
2 3 4 5				
4				
5				
6				
7				
8				
9		7		
10		TEI		
10				
12				
		hi v		
		1 = 1		

VES Carbon Bed Outlet Field Test Data

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

			Run 1						Run 2						Run 3			
Traverse	Stack	Delta	Delta	Tm	(F)	SQRT	Stack	Delta	Delta	Tm	ı(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	85	0.44	1.41	83	83	0.6633	89	0.41	1.31	94	94	0.6403	92	0.41	1.31	100	100	0.6403
2	85	0.42	1.34	86	83	0.6481	88	0.41	1.31	95	94		92	0.41	1.31	103	100	0.6403
3 [87	0.43	1.38	87	83	0.6557	89	0.43	1.38	97	95	0.6557	92	0.43	1.38	104	100	0.6557
4	85	0.43	1.38	89	83	0.6557	89	0.43	1.38	99			92	0.43	1.38	105	100	0.6557
5	86	0.35	1.12	90	84	0.5916	89	0.35	1.12	100	95		92	0.36	1.15	105	100	0.6000
6	85	0.37	1.18	90	84	0.6083	89	0.38	1.22	99	95		92	0.35	1.12	105	101	0.5916
7	85	0.34	1.09	91	84	0.5831	89	0.35	1.12	99	96		92	0.35	1.12	105	101	0.5916
8	85	0.30	0.96	91	84	0.5477	89	0.31	0.99	100	95		92	0.28	0.90	105	101	0.5292
9	88	0.25	0.80	91	85	0.5000	90	0.28	0.90	100	95		92	0.25	0.80	104	100	0.5000
10	88 86	0.21	0.67	91 91	85 85	0.4583 0.4796	91 91	0.22	0.70 0.74	100	96 96		92 92	0.22	0.70		100	0.4690
11 12	86	0.23	0.74	91	86	0.4796	91	0.23	0.74	100	96		92	0.22	0.70		100	0.4583
B1	86	0.23	1.12	88	87	0.5916	92	0.23	1.12	97	98		93	0.21	1.12	104	100	0.4363
2	86	0.35	1.12	89	87	0.5916	92	0.35	1.12	99			93	0.35	1.12	102	100	0.5916
3	87	0.37	1.18	92	87	0.6083	92	0.35	1.12	100	97		93	0.34	1.09	104	100	0.5831
4	86	0.37	1.18	93	88	0.6083	92	0.35	1.12	101	98		93	0.35	1.12	104	101	0.5916
5	88	0.35	1.12	92	88	0.5916	94	0.37	1.18	103	101		92	0.31	0.99	105	101	0.5568
6	86	0.32	1.02	93	88	0.5657	94	0.32	1.02	103	101		92	0.31	0.99	105	102	0.5568
7	87	0.23	0.74	94	89	0.4796	94	0.23	0.73	103	99		92	0.21	0.67	105	102	0.4583
8	87	0.20	0.64	94	89	0.4472	91	0.20	0.60	102	99	0.4472	92	0.19	0.61	104	101	0.4359
9	88	0.18	0.58	94	90	0.4243	91	0.18	0.58	102	99	0.4243	92	0.18	0.58	103	101	0.4243
10	87	0.18	0.58	94	90	0.4243	92	0.18	0.58	102	99	0.4243	92	0.16	0.51	102	101	0.4000
11	87	0.16	0.51	94	90	0.4000	92	0.16	0.51	102	99	0.4000	92	0.16	0.51	101	100	0.4000
12	88	0.16	0.51	94	91	0.4000	92	0.16	0.51	102	100		92	0.17	0.54	101	100	0.4123
						0.0000						0.0000						0.0000
						0.0000					<u> </u>	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					1	0.0000						0.0000
						0.0000					1	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			i			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
[0.0000						0.0000						0.0000
Average	86	0.30	0.96	91	86	0.5418	91	0.30	0.96	100	97	0.5426	92	0.29	0.93	104	101	0.5335



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

<u>Parameter</u>	<u>Run 1</u>	Run 2	<u>Run 3</u>
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	9/1/20	9/1/20	9/1/20
	843-1040	1124-1317	1402-1555
	96	96	96
	0.245	0.245	0.245
	0.84	0.84	0.84
	0.975	0.975	0.975
	1.56	1.56	1.56
	41.5	41.5	41.5
Rectangular Width, inches Rectangular Length, inches Stack Area, sq.ft. Barometric Pressure, inches of Hg Static Pressure, inches of H2O Dry Gas Meter Sample Volume, (VM)ft3	0	0	0
	0	0	0
	9.39	9.39	9.39
	29.98	29.98	29.98
	1.4	1.4	1.4
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	170.418	229.002	287.872
	228.526	287.229	344.638
	57.977	58.111	56.617
	86.4	90.9	92.2
	88.6	98.5	102.0
	0.96	0.96	0.93
	0.5418	0.5426	0.5335
Moisture Data Volume of water collected, mls Silica Gel, grams Total Collected, mls	13.2	14.2	10
	13.2	13.2	12.8
	26.4	27.4	22.8
ORSAT Data %02 %CO2 %CO	20.90	20.90	20.90 0.0
<u>Calculations</u>			
Vw(std), scf = Vm(std), dscf = Bws= Md= Ms= Vs, ft/sec = Qs, acfm = Qs(std), dscfm = Isokinetic Sampling Rate, %	1.243	1.290	1.073
	54.638	53.796	52.083
	0.022	0.023	0.020
	28.84	28.84	28.84
	28.60	28.58	28.62
	31.0	31.2	30.7
	17,477	17,577	17,291
	16,602	16,541	16,289
	98.4	97.2	95.6

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 Vinyl Ethers South Carbon Bed Outlet Fayetteville, North Carolina

Parameter:	Ru	n 1		R	un 2			Ri	ın 3			Av	erage	
Mol. Wt.	mg mg/dscm	ppm lb	<u>/hr mg</u>	mg/dscm	<u>ppm</u>	<u>lb/hr</u>	mg	mg/dscm	<u>ppm</u>	<u>lb/hr</u>	mg	mg/dscm	<u>ppm</u>	<u>lb/hr</u>
HFPO - Dimer Acid 330	0.00322 2.08E-03	1.52E-04 1.29	9E-04 0.0070	4.62E-03	3.37E-04	2.86E-04	0.00408	2.77E-03	2.01E-04	1.69E-04	0.00	3.16E-03	2.30E-04	1.95E-04

Where:

Pollutant Emission Concentration:
mq= total sample collected, millidarans
mq/dscm = millidarans of pollutant per dry standard cubic meter sampled = (mq/dscf) x (35.314 cubic feet/cubic meter)

pom = parts per million = ((mq/dscm x 24.04 liters/mol)/mol.wt))

Pollutant Emission Rate: $|b/hr = pounds \ of \ pollutant \ emitted \ per \ hour = mq/1000/[(453.59 \ q/lb)/(dscf)] \ x \ dscfm \ x \ 60 \ min/hr$



Example Calculations

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

Note: Values are shown for example purposes only.

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

170.418 Initial gas meter volume: Final gas meter volume: 228.526 Difference: 58.108

Volume of dry gas at standard conditions (dscf)

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

= 17.647 Х 0.000 x 0.975 x (29.98 + [(1.560 /13.6)/ 549

= 54.638

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

impinger catch (mls): 13 silica gel (g) 13.2 total: 26.4

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

 $= (0.04707) \times (VI,c)$ = 0.04707 x= 1.243

Bwo = Proportion by volume of water vapor in gas stream

= Vw,std/(Vw,std+Vm,std) 1.24 /(1.24 + 54.638) 0.022

Ps = Stack gas static pressure (in. Hg)

St/13.6 1.40 / 13.6 0.103

Pa = Absolute stack gas pressure (in. Hg)

= Ps+Pbar 0.103 29.98 30.08

MFD =Dry mole fraction of stack gas

1-Bwo 1 - 0.022 0.978

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 x 0.978 + 0.18 x 2.22375 28.60

Example Calculations

The Chemours Company - Fayetteville Works Vinyl Ethers South 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 0.54 x sqrt ( 0.64)
             31.0
Α
           Cross sectional areas of stack (sq. ft)
         = pi/4*d^2
         = 3.14159/4 x
                         3.46 ^2
             9.39
           Volumetric flow rate at actual conditions (acfm)
Qa
         = (60) sec/min(A)(Vs, avg)
            60
                    x 9.3934 x 31.01
         = 17,475
Ostd
           Volumetric flow rate at standard conditions (scfm)
         = Qa \times (528/Ts,avg + 460) \times Pa/29.92
              17,475 x ( 528 / 546 ) x 1.005
              16,978
         Volumetric flow rate at dry standard conditions per minute(dscfm)
Qstd,dry
         = Qstd x (1-Bwo)
         = 16,978 x
                        0.9778
         = 16,601
mg/dscm HFPO-DA concentration
         = (mg/dscf) \times 35.314 \text{ cu. ft./cu. meter}
       = (0.003 / 54.64):35.314
         = 2.08E-03
lb/hr
           HFPO-DA Mass Emission Rate
         = mg/1000/[(453.59 g/lb)/(dscf)] \times dscfm \times 60 min/hr
         = 0.00 / 1,000 / [453.59) / 54.64) x
                                                                          60
```

= 1.29E-04

EPA Isokinetic Field Sheet

Facetteening Company Stack Delay Rate Stack Delay		Pitot	+	1			7		(lov)	Final							(gm)	Final				ain	ml.	dm		Total			ta	Tare					Data (%	CO ₂			
Content Sompany Stack Number S	ak Check Rates	Sample Rate	n. cfm				0		Impinger Dat	# Initial	10	1 60	4	2	9		Silica Gel Dat	# Initial		2		Moisture (Filter Da	Z	-	2	3		olecular Weight	# 0 ²	1	2	3
Company Run Number Chemours Company Run Number Chemours Company Run Number Chemours Company	Fe			-																		NowME- 200.561	VOLVME-200,692											Stollogs	8				
Company Start Number Company Start Number Company Comp		0.84	0		3		NA			Vacuum (in. hg)	\ \	5	5	5	7	7	6	7	h	6	5	4	6	4	9	9	9	9	9	5	4	7	1	4					
Chemours Company Run Number Stack Diameter Outlet Outlet Outlet Stack Diameter Pres Static Pressure Barometric Pres Static Pressure Barometric Pres Static Pressure Barometric Pres Static Pressure Barometric Pres Static Pressure Meter Box # Meter Gamma Velocity Orifice Meter Neter Gamma Velocity Orifice Neter Neter Gamma Neter Gamma	243		707	78-2	1-1	,			it	Meter	28	83	83	53	24	84	23	ક્ષ	25	200	18	86	27	23	507	88	00	88	89	68	60	06	90	16					
Chemours Company Run Number Chemours Company Stack Diameter Coco C	mper	efficient	CI.D.	x I.D.	r Out I.D	ize	p I.D.		Farenhe	Meter	28	86	18	85	53	S	16	41	91	13	13	91	88	89	26	93	26	93	44	66	46	34	16	44					
Chemours Company Run Number Stack Diameter Stack Stack Stack Diameter Stack Stac	Pitot Nu	Pitot Co	Stack TO	Oven Bo	Impinge	Nozzle S	XAD Tra	3.5	Degrees	Aux	63	09	09	55	53	23	58	53	53	09	69	60	29	09	56	Se	58	5	88	00	5	5-5	09	53					
Chemours Company Run Number Stack Diameter Stack Stack Stack Diameter Stack Stac								1	adings in	mpinger	5	47	48	96	47	95	48	47	44	48	45	45	47	46	96	48	64	47	47	65	66	49	95	43					
Chemours Company Run Number Stack Diameter Stack Stack Stack Diameter Stack Stac		ches		4		9	5		ture Rea	Oven Box	63	26	176	36	36	44	93	93	92	16	16	46	26	44	35	96	44	24	95	36	36	55	35	36					
Chemours Company Run Number Chemours Company Stack Diameter Coco C		41.5-in	29.	1:1	B	5	0.97		empera	Probe	93	46	16	06	44	26	92	-5	53	93	66	93	25	16		53	4.5	35	76	36	44	65	96	36					
Cutlet 2020 2011et 2020 2011et 2020 2011et 2020 2011et 2020	nber	ameter	ric Pres.	essure	# X0	elta H	amma			Stack	56	35	87	78	38	8	55	82	80	80	98			900	87	86	88	200	87	100	38	500	87	88					
Ine Chemours Company ion Fayetteville, NC act of 1/2020 ators		Stack Di	Baromet	Static Pr	Meter Bo	Meter de	Meter G		Meter	Volume (ft³)	170.418	173.2	176.4	l	į	184.5	187.52	150.6	(92.3	194.4	196.6	7.851	200.548	1	206.0	208.6		(,	213.9	220.9	(224.7	226.7	228,526				
ion Fayetteville, N Factorial Particulars in Fayetteville, N Fe / 52 outlet	Company	U		1			10		Orifice	Setting (in. H ₂ O)	1.41	1.34	1.38	1.38	1.12	1.18	1.09		0.20	0,67	17.0	0.74	7:15	112	- 20	1.18	1:12	1.02	0.74	6.64	0.78	0,50	0.51	15.0					
ion	e Chemours	retteville, N	S Outlet		5/28	843			Velocity	Head (in. H ₂ O)	77,0			7,0	ó	ò	0	ò							0.37	0.37		ò	0	-	0	0		0	9				
한 응 용 - 볼 는 든 - [응 후 -] [전하] 전하이지 아이의 라이 [전] [전하] 전하이 아이 다 나는 다 본 다 된 다 되었다.	. 13			6					Sample	_	4				ĭ																Ï			ij					
Source Source Start End 1 Samp Point 1 1 1 1 1 1 1 1 1 1 1 1 1	Client	Location	Source	Date	Operators	Start Time	End Time		Sample	Point	A1	17	4.9	4	41	T P		3	5	10			31	(4	(4)	4	(v)	9 1	,	8	ς,	10	11	12					



EPA Isokinetic Field Sheet

Sample Rate Pitot in. cfm +	2 0.00 S	Impinger Data (vol)	# Initial Final	2	23	4	200	9	Silica Gel Data (am)	# Toitial Final	100	2		Moisture Gain	ml.	mg		Total			ŀ	# Number Tare	1	2	n		eight D	# 0 ₂ CO ₂	,-1 (2	2
Initial			Comments/Notes											VOLUME: 259.418/84	Voterson 1894 to	NOCUME! 25 1 15															
2 0.84 Z	NA		Vacuum (in. hg)	7	4	2	7	23	1	20	7	a	南	m	7	h	h	S	5	5	4	4	4	4	7	4					
500 1	4	it	Meter	16	46	200	200	25	200	200	95	96	96	16	38	25	67	28	197	101	8	66	99	66	50	001					
mber efficient X I.D.	ize p I.D.	Farenhe	Meter Inlet	16	Pa Val	97		00/	77	7-1	100	601	001	100	47	98	100	101	103	(63	(03	102	102	102	102	102					
Pitot Number Pitot Coefficient Stack TC I.D. Oven Box I.D.	Nozzle Size XAD Trap I.D.	Degrees	Aux	63	60	19	00	00	53	76	n or	53	59	00	19	29	29	63	64	64	64	00	09	89	58	56					Ī
		Temperature Readings in Degrees Farenheit	Impinger	65	25	54	5.5	So	5	200	S	5	15	66	83	56	54	20	200	26	53	52	20	45	45	44					
ches	1	iture Rea	Oven Box	56	96	96	36	25	200	20	200	86	65	100	00/	56	66	00/		66	6	65	100	100	24	86					
2. 41.5-inches	1.56	Tempera	Probe	56	96		250	200	10	200	67	96	67	97	100	100	100	101	104	103	102	60	9,8	101	101	101					
ameter ric Pres. essure	elta H amma		Stack	18	88	500	200	200	22	00	000	-6	16	16	26	26	26	26	24	94	94	16	16	22	92	92		2			
Run Number Stack Diameter Barometric Pres Static Pressure	Meter Gamma	Meter	Volume (ft³)	229.002	1	234.9	237.5	240.7	242.5	21000	250.7	253.0	755.3	257,4	259,534	1	264.4	1	1	1	277.6		280.46	281.3	283.5	285.5	Lance Revenue	287.129			
Company	12	Orifice	Setting (in. H ₂ 0)	1.31	1.31	- 33	1.38	1.12	1.46	1.1	05.00	6.70	41.0	0.74	1.12	1.17	1:12	1.12	1.18	1.02	. 73	60	.58	58	5	.S.	# A 11				
-Jr.	1124	Sample Sample Velocity	Time Head (mín) (in. H ₂ O)	4 6,41	80-41	2.0	ò	0	24 0, 38	0		0		48 0 . 23	52 0.35	56 0.35	60 0 . 35		*	•	76 . 23	80 20	84 , 18	88	1	3/1 96					
Client Location Source Date	Start Time End Time	Sample Sa	Point (A1	2	0	4	2	9 1	0	0 6	10	11	12	1229 B1		3	4	5	9	7	8	6	10	11	12					



EPA Isokinetic Field Sheet

Pitot N	W
Pitot C	41.5-inches
Stack TC I.	1.9
Oven Box I.	29.98
Imping	8
Nozzle	1.56
XAD Trap I.	279.0

ita (vol)	Final							ata (gm)	Final				Gain	m.	mb		Total			ata	Tare					ht Data (%	CO2				
Impinger Data (vol)	Initial							Silica Gel Data (gm)	Initial				Moisture Gain							Filter Data	Number				1	lolecular Weight Data	02				
	#	7	n	4	S	9		S	#	-1	7		1								#	Н	N	3		Nole	#	Н	7	m	Avg
A. S. S. W. V. L. S. S. S.	Comments/Notes				AP-0.43	The Part of the Part of							V=317.796	V= 317,945	4																
	Vacuum (in. hg)	4	4	ġ	4	4	4	4	W	M	3	3	3	4	4	4	ή	4	2	4	h	J	6	h	ħ	7			7		
	Meter V	100	100	100	100	001	101	101	(0)	00/	00)	100	100	001	100	100	101	101	102	101	101	101	101	1001	100				1		1
arenheit	Meter	100	201	1001	tot	501	207	501	105	104	hal	104	104	101	201	104	104	501	100/	105	104	103	102	181	10)						
egrees !	Aux	20	09	09	09	00	53	28	88	27	57	58	95	p9	20	55	25	5.4	55	125	50	26	5.6	27	27						
Temperature Readings in Degrees Farenheit	Impinger	SS	84	100	20	84	94	hh	95	47	hh	12%	hh	5.6	43	43	77	76	47	14	77	43	24	24	42						Ī
ure Rea	Oven I Box	001	101	001	66	001	98	100	66	101	001	001	101	102	101	102	101	100	00/	56	56	200	67	25	97						ĺ
emperat	Probe	301	69	001		66	00/	98	98	(00)	101	66	90)	103	100	001	001	66	88	66	98	66	100	98	200						
Te	Stack	92	25	26	26	25	26	25	25	26	92	92	25	93	93	26	93	75	63	93	92	25	76	92	23						
Meter	Volume (ft²)	287.812)	293.5	1)	301.6	2.404.2	306.9	3.905	311.6	313.5	315.6	346]	32355	325.7)	3306	333.1	335.2	337.7	239.5	1	342.7	344.638					
Orifice	Setting (in. H ₂ 0)	1.81	1.51	1.38	1.38	7.15	7:12	21.1	080	6.80	07.0	0.70	69.0	1.12	7.15	1.09	1112	0.99	66.0	10.0	19:0	85.0	12.0	0.51	12.0						
Velocity	Head (in. H ₂ O)	17:0	1410	0, 43	公路.	0.36	0.35	0.35	82.0	52.0	0.2	0.22	12.0	0.35	0.35	6.34	0 35	0:31	0.31	0.21	61.0	81.0	91.0	2	11.0	1					
Sample	Time (min)	4	8	12	16	20	24	28	32	36	40	44	48	52	26	09	64	89	72	9/	80	84	88	92	96						Ī
Sample Sample	Point	A1	2	3	4	5	9	7	8	6	10	11	12	B1	2	3	4	2	9	7	8	6	10	11	12			Ť			l

1507 BI



Sample Train Recovery Data Sheet

	Final ml or gm	Initial ml or gm	Net Gain	Filter #1 NOD/O
pinger #1	519.4	507.8	11-6	
pinger #2	699.6	699:6	8	Filter #2
npinger #3	772.8	773.2	4	
pinger #4	492-2	490.2	2.0	Filter #3
ipinger #5	075.8	882.6	13-2	
pinger #6		-		Sun Start Time X42
pinger #7 pinger #8			-	Run Start Time 0.5
ipinger #6	-	7		Run End Time 1040
		Total Gain	ml/g	
				Recovery Technician P. Grady
Run #	_			
	Final ml or gm	Initial ml or gm	Net Gain	
		17/10/10	100	Filter #1 MOOLO
pinger #1	493-6	483.6	10-0	
pinger #2	785.6	786.2	-0.6	Filter #2
npinger #3	779.0	779.0		
npinger #4	376-0	8218	132	Filter #3
npinger #5 npinger #6	-835.0	061.0	13.	
npinger #7				Run Start Time /124
npinger #8				
				Run End Time 1317
		Total Gain	m1/	
		Total Gain	ml/s	
				Recovery Technician P. Grady
Run# 3				
	Final ml or gm	Initial ml or gm	Net Gain	
	F11 11	~9 ^	8.4	Filter #1 MODIO
npinger #1	5/6.4	300.0	0-1	
npinger #2	71.42	7642-	8	Filter #2
npinger #3 npinger #4	492 0	490.4	1.6	Filter #3
npinger #5	908.7	895.4	12.8	11001 1100
pinger #6				44.
pinger #7				Run Start Time 1402
npinger #8	-			ice
		Tabal Cara	4.0	Run End Time 15)5
		Total Gain	ml/s	gm



Nozzle Calibration Form

Plant I.D.	Chemours	Project No.	2
Source I.D.	VES Inlet	Personnel	P. Grady
	Date 9 31/25		1

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

< 0.004" between high & low diameters

Cyclonic Flow Determination Data Sheet

Client	CHEMOVES	Stack Diameter	41.5
Location Source	FAYETTE VILLE NG	Upstream Distance Downstream Distance	150"
Date Operator	8.31-20 Jas	Minimum Traverse Points Port Collar Length	10" 11.25"

Leak Ck	Int. Post	V	V				
Barometr	ic Pressure						
Probe ID		25					
Velocity (Guage ID	- 7	62				
Static Pre							
Time							

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (^o F)	Angle at Null
1		Ao	108	2
2		,45	105	3
3		.45	104	5
4		,45	104	5
5		,40	104	6
6		.35	104	6
7		,25	103	7
90		. 75	103	7
9		-20	163	5
10		.20	103	15
11		,15	103	5
12		.15	103	10
1		40	101	5
2		.48	101	7
3		.50	102	7
4		.58	102	5
5		.45	602	10
6		.40	102	10
7		. 25	102	5
		.30	102	7
9		.25	102	6
10		,20	102	7
1/		.15	102	15
12		.10	102	10

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (⁰ F)	Angle at
		1144		
		77		
			1	
				-
_				
			-	
		1 -	1	
				-

APPENDIX D LABORATORY DATA

VES 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: 140-20288-1

Client Project/Site: VES CB Inlet - M0010

For:

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

Attn: Michael Aucoin

Authorized for release by: 9/21/2020 2:13:37 PM

Courtney Adkins, Project Manager II

owwelf Ackins

(865)291-3019

courtney.adkins@eurofinset.com

Review your project results through Total Access

Have a Question?

Ask
The Expert

Visit us at:

www.eurofinsus.com/Env

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

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

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

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Definitions/Glossary

Client: The Chemours Company FC, LLC

Job ID: 140-20288-1

Project/Site: VES CB Inlet - M0010

Qualifiers

LCMS

Qualifier Qualifier Description

B Compound was found in the blank and sample.

Glossary

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

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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Eurofins TestAmerica, Knoxville

Case Narrative

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

Job ID: 140-20288-1

Job ID: 140-20288-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative 140-20288-1

Sample Receipt

The samples were received on September 4, 2020 at 12:35 PM in good condition and properly preserved. The temperature of the cooler at receipt was 1.6° C.

LCMS

Method 537 (modified): The required dilution factor for the following samples were higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): QF-2322,2324 VES BC INLET R1 M0010 FH (140-20288-1), QF-2329,2330 VES BC INLET R2 M0010 FH (140-20288-5) and QF-2336,2337 VES BC INLET R3 M0010 FH (140-20288-9). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: QF-2322,2324 VES BC INLET R1 M0010 FH (140-20288-1), QF-2329,2330 VES BC INLET R2 M0010 FH (140-20288-5) and QF-2336,2337 VES BC INLET R3 M0010 FH (140-20288-9). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples QF-2331,2332,2334 VES BC INLET R2 M0010 BH (140-20288-6) and QF-2338,2339,2341 VES BC INLET R3 M0010 BH (140-20288-10) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The required dilution factor for the following samples were higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): QF-2324,2325,2327 VES BC INLET R1 M0010 BH (140-20288-2). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

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

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: QF-2324,2325,2327 VES BC INLET R1 M0010 BH (140-20288-2), QF-2331,2332,2334 VES BC INLET R2 M0010 BH (140-20288-6) and QF-2338,2339,2341 VES BC INLET R3 M0010 BH (140-20288-10). The sample was analyzed at a dilution based on screening results.

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

Organic Prep

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

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Client: The Chemours Company FC, LLC

Project/Site: VES CB Inlet - M0010

HFPO-DA

Lab Sample ID: 140-20288-1 Client Sample ID: QF-2322,2324 VES BC INLET R1 M0010 FH Dil Fac D Method Result Qualifier RL MDL Unit **Prep Type** HFPO-DA 2.00 1.16 ug/Sample 537 (modified) 96.9 Total/NA Client Sample ID: QF-2324,2325,2327 VES BC INLET R1 M0010 Lab Sample ID: 140-20288-2 BH Analyte Result Qualifier RL MDL Unit Dil Fac D Method **Prep Type** HFPO-DA 27.1 B 0.800 0.700 ug/Sample 537 (modified) Total/NA Client Sample ID: QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 Lab Sample ID: 140-20288-3 **CONDENSATE** Dil Fac D Method Analyte Result Qualifier RL MDL Unit **Prep Type** HFPO-DA 0.478 0.0585 0.00965 ug/Sample 537 (modified) Total/NA Lab Sample ID: 140-20288-4 Client Sample ID: QF-2328 VES BC INLET R1 M0010 **BREAKTHROUGH XAD-2 RESIN TUBE** Analyte RL **MDL** Unit Result Qualifier Dil Fac D Method **Prep Type** HFPO-DA 0.00988 B 0.00160 0.00140 ug/Sample 537 (modified) Total/NA Client Sample ID: QF-2329,2330 VES BC INLET R2 M0010 FH Lab Sample ID: 140-20288-5 Analyte MDL Unit Dil Fac D Method Result Qualifier RI **Prep Type** 0.0580 ug/Sample HFPO-DA 0.100 537 (modified) 6.11 Total/NA Client Sample ID: QF-2331,2332,2334 VES BC INLET R2 M0010 Lab Sample ID: 140-20288-6 BH Analyte Result Qualifier **MDL** Unit Dil Fac D Method **Prep Type**

Client Sample ID: QF-2333 VES BC INLET R2 M0010 IMP 1,2&3	Lab Sample ID: 1
CONDENSATE	

0.833 B

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.112		0.0570	0.00941	ug/Sample	1	_	537 (modified)	Total/NA

0.0320

0.0280 ug/Sample

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537 (modified)

Total/NA

140-20288-7

Client Sample ID: QF-2335 VES BC INLET R2 M0010 Lab Sample ID: 140-20288-8 **BREAKTHROUGH XAD-2 RESIN TUBE**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00890	В	0.00160	0.00140	ug/Sample	1	_	537 (modified)	Total/NA

Client Sample ID: QF-2336,2337 VES BC INLET R3 M0010 FH Lab Sample ID: 140-20288-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	5.86		0.100	0.0580	ug/Sample	1	_	537 (modified)	Total/NA

Client Sample ID: QF-2338,2339,2341 VES BC INLET R3 M0010 Lab Sample ID: 140-20288-10 BH

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D Method	Prep Type
HFPO-DA	1.27 B	0.0320	0.0280 ug/Sample	20 537 (modifi	ied) Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

9/21/2020

Job ID: 140-20288-1

Detection Summary

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

Job ID: 140-20288-1

Client Sample ID: QF-2340 VES BC INLET R3 M0010 IMP 1,2&3

Lab Sample ID: 140-20288-11

CONDENSATE

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D	Method	Prep Type
HFPO-DA	0.224	0.0605	0.00999 ug/Sample	1	537 (modified)	Total/NA

HFPO-DA 0.224 0.0605 0.00999 ug/Sample 1 537 (modified) Total/NA

Client Sample ID: QF-2342 VES BC INLET R3 M0010 Lab Sample ID: 140-20288-12 BREAKTHROUGH XAD-2 RESIN TUBE

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D	Method	Prep Type
HFPO-DA	0.00806 B	0.00160	0.00140 ug/Sample	1	537 (modified)	Total/NA

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Client: The Chemours Company FC, LLC Job ID: 140-20288-1

Project/Site: VES CB Inlet - M0010

Client Sample ID: QF-2322,2324 VES BC INLET R1 M0010 FH

Lab Sample ID: 140-20288-1 Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 2.00 09/09/20 11:52 09/16/20 16:57 1.16 ug/Sample 96.9 Isotope Dilution %Recovery Qualifier I imits Prepared Analyzed Dil Fac 13C3 HFPO-DA 25 - 150 09/09/20 11:52 09/16/20 16:57 90

Client Sample ID: QF-2324,2325,2327 VES BC INLET R1 M0010 Lab Sample ID: 140-20288-2

BH

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac **HFPO-DA** 27.1 B 0.800 0.700 ug/Sample 09/08/20 09:30 09/18/20 18:04 Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 09/08/20 09:30 09/18/20 18:04 84 25 - 150

Client Sample ID: QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 Lab Sample ID: 140-20288-3

CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 0.0585 0.00965 ug/Sample 09/14/20 11:33 09/15/20 13:33 0.478 Isotope Dilution %Recovery Qualifier Dil Fac Limits Prepared Analyzed 13C3 HFPO-DA 09/14/20 11:33 09/15/20 13:33 99 25 - 150

Client Sample ID: QF-2328 VES BC INLET R1 M0010 Lab Sample ID: 140-20288-4

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Result Qualifier Analyte RL MDL Unit D Prepared Analyzed Dil Fac HFPO-DA 0.00988 0.00160 0.00140 ug/Sample 09/08/20 09:30 09/18/20 18:13

Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 84 25 - 150 09/08/20 09:30 09/18/20 18:13

Client Sample ID: QF-2329,2330 VES BC INLET R2 M0010 FH Lab Sample ID: 140-20288-5

Date Collected: 09/01/20 00:00 Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Result Qualifier Analyte RI **MDL** Unit Dil Fac Prepared Analyzed 0.100 **HFPO-DA** 6.11 0.0580 ug/Sample 09/09/20 11:52 09/16/20 17:05

Eurofins TestAmerica, Knoxville

Matrix: Air

Page 7 of 29 9/21/2020 Client: The Chemours Company FC, LLC Project/Site: VES CB Inlet - M0010

Client Sample ID: OF 2220 2220 VES DC INLET D2 M0040 EU

Client Sample ID: QF-2329,2330 VES BC INLET R2 M0010 FH Lab Sample ID: 140-20288-5

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

 Isotope Dilution
 %Recovery
 Qualifier
 Limits
 Prepared
 Analyzed
 Dil Fac

 13C3 HFPO-DA
 96
 25 - 150
 09/09/20 11:52
 09/16/20 17:05
 1

Client Sample ID: QF-2331,2332,2334 VES BC INLET R2 M0010

BH

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Dil Fac Analyte Result Qualifier RL MDL Unit D Prepared Analyzed HFPO-DA 0.833 B 0.0320 09/08/20 09:30 09/18/20 18:22 0.0280 ug/Sample 20 %Recovery Qualifier Isotope Dilution Dil Fac Limits Prepared Analyzed 13C3 HFPO-DA 09/08/20 09:30 09/18/20 18:22 89 25 - 150 20

Client Sample ID: QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 Lab Sample ID: 140-20288-7

CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Result Qualifier RL Analyte MDL Unit D Prepared Analyzed Dil Fac HFPO-DA 0.112 0.0570 0.00941 ug/Sample 09/14/20 11:33 09/15/20 13:41 Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 105 25 - 150 09/14/20 11:33 09/15/20 13:41

Client Sample ID: QF-2335 VES BC INLET R2 M0010 Lab Sample ID: 140-20288-8

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RI MDL Unit Prepared Analyzed Dil Fac 0.00160 09/08/20 09:30 09/18/20 18:31 HFPO-DA 0.00140 ug/Sample 0.00890 B Isotope Dilution %Recovery Qualifier Limits Analyzed Dil Fac Prepared 13C3 HFPO-DA 09/08/20 09:30 09/18/20 18:31 25 - 150 71

Client Sample ID: QF-2336,2337 VES BC INLET R3 M0010 FH Lab Sample ID: 140-20288-9

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 0.100 09/09/20 11:52 09/16/20 17:14 5.86 0.0580 ug/Sample Isotope Dilution Qualifier Limits Analyzed Dil Fac %Recovery Prepared 13C3 HFPO-DA 09/09/20 11:52 09/16/20 17:14 93 25 - 150

Eurofins TestAmerica, Knoxville

Page 8 of 29 9/21/2020

Job ID: 140-20288-1

Lab Sample ID: 140-20288-6

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Client Sample Results

Client: The Chemours Company FC, LLC

Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Client Sample ID: QF-2338,2339,2341 VES BC INLET R3 M0010 Lab Sample ID: 140-20288-10

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Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
HFPO-DA	1.27	В	0.0320	0.0280	ug/Sample		09/08/20 09:30	09/18/20 18:39	20		
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
13C3 HFPO-DA	80		25 - 150				09/08/20 09:30	09/18/20 18:39	20		

Client Sample ID: QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 Lab Sample ID: 140-20288-11

CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Flu	orinated Alky	Alkyl Substances							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.224		0.0605	0.00999	ug/Sample		09/14/20 11:33	09/15/20 13:50	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	103		25 - 150				09/14/20 11:33	09/15/20 13:50	1

Client Sample ID: QF-2342 VES BC INLET R3 M0010 Lab Sample ID: 140-20288-12

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluor	inated Alky	d Substand	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00806	В	0.00160	0.00140	ug/Sample	_	09/08/20 09:30	09/18/20 18:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	73		25 - 150				09/08/20 09:30	09/18/20 18:48	1

9/21/2020

Default Detection Limits

Client: The Chemours Company FC, LLC Job ID: 140-20288-1

Project/Site: VES CB Inlet - M0010

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 Job ID: 140-20288-1

Project/Site: VES CB Inlet - M0010

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)	
140-20288-1	QF-2322,2324 VES BC INLET F	90	
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 BH	84	
140-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 CONDENSATE	99	
140-20288-4	QF-2328 VES BC INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	84	
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	96	
140-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 BH	89	
140-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 CONDENSATE	105	
140-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	71	
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	93	
140-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 BH	80	
140-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 CONDENSATE	103	
140-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	73	
LCS 140-42523/2-B	Lab Control Sample	55	
LCS 140-42561/2-B	Lab Control Sample	87	
LCS 140-42711/2-B	Lab Control Sample	97	
LCSD 140-42523/3-B	Lab Control Sample Dup	64	
LCSD 140-42561/3-B	Lab Control Sample Dup	83	
LCSD 140-42711/3-B	Lab Control Sample Dup	103	
MB 140-42523/15-B	Method Blank	59	
MB 140-42523/1-B	Method Blank	51	
MB 140-42561/1-B	Method Blank	85	
MB 140-42711/1-B	Method Blank	99	

HFPODA = 13C3 HFPO-DA

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

L

13C3 HFPO-DA

09/08/20 09:30 09/18/20 13:55

Method: 537 (modified) - Fluorinated Alkyl Substances

MB MB

51

MB MB

Lab Sample ID: MB 140-42523/15-B	Client Sample ID: Method Blank
Matrix: Air	Prep Type: Total/NA

M **Analysis Batch: 42907** Prep Batch: 42523 MB MB

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

Lab Sample ID: MB 140-42523/1-B Client Sample ID: Method Blank

Prep Type: Total/NA **Matrix: Air Analysis Batch: 42907** Prep Batch: 42523

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 0.00160 09/08/20 09:30 09/18/20 13:55 $\overline{\mathsf{ND}}$ 0.00140 ug/Sample MB MB Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac

25 - 150

Lab Sample ID: LCS 140-42523/2-B Client Sample ID: Lab Control Sample Prep Type: Total/NA Matrix: Air **Analysis Batch: 42907** Prep Batch: 42523

Spike LCS LCS %Rec. Analyte Added Result Qualifier I imits Unit %Rec HFPO-DA 0.0200 0.01854 60 - 140 ug/Sample 93 LCS LCS

Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 55

Lab Sample ID: LCSD 140-42523/3-B Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA **Matrix: Air** Prep Batch: 42523 **Analysis Batch: 42907** LCSD LCSD Spike %Rec. RPD Analyte Added Result Qualifier Unit %Rec Limits RPD Limit HFPO-DA 0.0200 0.01662 83 60 - 140 ug/Sample

LCSD LCSD %Recovery Qualifier Isotope Dilution Limits 13C3 HFPO-DA 25 - 150 64

Lab Sample ID: MB 140-42561/1-B **Client Sample ID: Method Blank Matrix: Air** Prep Type: Total/NA **Analysis Batch: 42824** Prep Batch: 42561

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

9/21/2020

Project/Site: VES CB Inlet - M0010

Client: The Chemours Company FC, LLC

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

Client Sample ID: Lab Control Sample Lab Sample ID: LCS 140-42561/2-B **Matrix: Air** Prep Type: Total/NA

Analysis Batch: 42824 Prep Batch: 42561 Spike LCS LCS %Rec.

Result Qualifier Added Limits Analyte Unit %Rec HFPO-DA 0.0200 0.01768 ug/Sample 88 60 - 140

LCS LCS

Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 87

Lab Sample ID: LCSD 140-42561/3-B **Client Sample ID: Lab Control Sample Dup**

Matrix: Air

Prep Type: Total/NA **Analysis Batch: 42824** Prep Batch: 42561

LCSD LCSD Spike %Rec. **RPD** Analyte Added Result Qualifier Unit %Rec Limits RPD Limit HFPO-DA 0.0200 0.01792 ug/Sample 90 60 - 140

LCSD LCSD

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

Lab Sample ID: MB 140-42711/1-B Client Sample ID: Method Blank Prep Type: Total/NA

Matrix: Air

Analysis Batch: 42757 Prep Batch: 42711

MB MB

Analyte Result Qualifier **MDL** Unit Prepared Analyzed Dil Fac RI HFPO-DA 0.000500 0.0000825 ug/Sample 09/14/20 11:33 09/15/20 11:47 ND

MB MB Isotope Dilution Qualifier Limits Prepared Analyzed Dil Fac %Recovery 13C3 HFPO-DA 25 - 150 09/14/20 11:33 09/15/20 11:47 99

Lab Sample ID: LCS 140-42711/2-B **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Matrix: Air

Prep Batch: 42711 **Analysis Batch: 42757** LCS LCS

Spike %Rec. Analyte Added Result Qualifier %Rec Limits Unit

HFPO-DA 0.0100 0.009984 100 60 - 140 ug/Sample

LCS LCS

Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 97

Lab Sample ID: LCSD 140-42711/3-B Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA **Analysis Batch: 42757** Prep Batch: 42711

Spike LCSD LCSD %Rec. **RPD** Added Result Qualifier Limits RPD Limit Analyte Unit %Rec HFPO-DA 0.0100 0.009072 ug/Sample 91 60 - 140 10

LCSD LCSD

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

9/21/2020

QC Association Summary

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

Job ID: 140-20288-1

LCMS

Prep Batch: 42523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 B	Total/NA	Air	None	
140-20288-4	QF-2328 VES BC INLET R1 M0010 BREAKTHR(Total/NA	Air	None	
140-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 B	Total/NA	Air	None	
140-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHR(Total/NA	Air	None	
140-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 B	Total/NA	Air	None	
140-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHR(Total/NA	Air	None	
MB 140-42523/15-B	Method Blank	Total/NA	Air	None	
MB 140-42523/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 42561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batcl
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Total/NA	Air	None	<u> </u>
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Total/NA	Air	None	
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Total/NA	Air	None	
MB 140-42561/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 B	Total/NA	Air	Split	42523
140-20288-4	QF-2328 VES BC INLET R1 M0010 BREAKTHR(Total/NA	Air	Split	42523
140-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 B	Total/NA	Air	Split	42523
140-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHR	Total/NA	Air	Split	42523
140-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 B	Total/NA	Air	Split	42523
140-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHR(Total/NA	Air	Split	42523
MB 140-42523/15-B	Method Blank	Total/NA	Air	Split	42523
MB 140-42523/1-B	Method Blank	Total/NA	Air	Split	42523
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	Split	42523
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42523

Cleanup Batch: 42591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Total/NA	Air	Split	42561
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Total/NA	Air	Split	42561
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Total/NA	Air	Split	42561
MB 140-42561/1-B	Method Blank	Total/NA	Air	Split	42561
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	Split	42561
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42561

Prep Batch: 42711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 C	Total/NA	Air	None	
140-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 C	Total/NA	Air	None	
140-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 C	Total/NA	Air	None	
MB 140-42711/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	None	

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QC Association Summary

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

LCMS

Cleanup Batch: 42725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 C	Total/NA	Air	Split	42711
140-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 C	Total/NA	Air	Split	42711
140-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 C	Total/NA	Air	Split	42711
MB 140-42711/1-B	Method Blank	Total/NA	Air	Split	42711
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	Split	42711
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42711

Analysis Batch: 42757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 C	Total/NA	Air	537 (modified)	42725
140-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 C	Total/NA	Air	537 (modified)	42725
140-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 C	Total/NA	Air	537 (modified)	42725
MB 140-42711/1-B	Method Blank	Total/NA	Air	537 (modified)	42725
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42725
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42725

Cleanup Batch: 42822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Total/NA	Air	Dilution	42591
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Total/NA	Air	Dilution	42591
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Total/NA	Air	Dilution	42591

Analysis Batch: 42824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Total/NA	Air	537 (modified)	42822
MB 140-42561/1-B	Method Blank	Total/NA	Air	537 (modified)	42591
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42591
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42591

Cleanup Batch: 42906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-2	QF-2324.2325.2327 VES BC INLET R1 M0010 B	Total/NA	Air	Dilution	42590

Analysis Batch: 42907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 B	Total/NA	Air	537 (modified)	42906
140-20288-4	QF-2328 VES BC INLET R1 M0010 BREAKTHR(Total/NA	Air	537 (modified)	42590
140-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 B	Total/NA	Air	537 (modified)	42590
140-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHR(Total/NA	Air	537 (modified)	42590
140-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 B	Total/NA	Air	537 (modified)	42590
140-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHR(Total/NA	Air	537 (modified)	42590
MB 140-42523/15-B	Method Blank	Total/NA	Air	537 (modified)	42590
MB 140-42523/1-B	Method Blank	Total/NA	Air	537 (modified)	42590
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42590
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42590

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Job ID: 140-20288-1

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

Client Sample ID: QF-2322,2324 VES BC INLET R1 M0010 FH

Lab Sample ID: 140-20288-1

Date Collected: 09/01/20 00:00 Date Received: 09/04/20 12:35 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	120 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			60 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			5 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 16:57	JRC	TAL KNX
	Instrume	nt ID: LCA								

Client Sample ID: QF-2324,2325,2327 VES BC INLET R1 M0010 Lab Sample ID: 140-20288-2

BH

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Cleanup	Dilution			20 uL	10000 uL	42906	09/18/20 12:20	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 18:04	JRC	TAL KNX
	Instrumer	nt ID: I CA								

Client Sample ID: QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 Lab Sample ID: 140-20288-3

CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00855 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 13:33	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: QF-2328 VES BC INLET R1 M0010 Lab Sample ID: 140-20288-4

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 18:13	JRC	TAL KNX
	Instrumer	nt ID: LCA								

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

Client Sample ID: QF-2329,2330 VES BC INLET R2 M0010 FH

Lab Sample ID: 140-20288-5 Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	120 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			60 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:05	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: QF-2331,2332,2334 VES BC INLET R2 M0010

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		20			42907	09/18/20 18:22	JRC	TAL KNX
	Instrumer	t ID: LCA								

Client Sample ID: QF-2333 VES BC INLET R2 M0010 IMP 1,2&3

CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00877	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
					Sample					
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 13:41	JRC	TAL KNX
	Instrumer	nt ID: I CA								

Client Sample ID: QF-2335 VES BC INLET R2 M0010

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 18:31	JRC	TAL KNX
	Instrumer	nt ID: LCA								

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Lab Sample ID: 140-20288-6

Lab Sample ID: 140-20288-7

Lab Sample ID: 140-20288-8

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

Client Sample ID: QF-2336,2337 VES BC INLET R3 M0010 FH

Lab Sample ID: 140-20288-9 Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	128 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			64 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:14	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: QF-2338,2339,2341 VES BC INLET R3 M0010 Lab Sample ID: 140-20288-10

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

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

Client Sample ID: QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 Lab Sample ID: 140-20288-11

CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00826	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
					Sample					
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 13:50	JRC	TAL KNX
	Instrumer	nt ID: I CA								

Client Sample ID: QF-2342 VES BC INLET R3 M0010 Lab Sample ID: 140-20288-12

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 18:48	JRC	TAL KNX
	Instrumer	nt ID: LCA								

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

Client Sample ID: Method Blank

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

Lab Sample ID: MB 140-42523/15-B

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:04	JRC	TAL KNX
	Instrumer	it ID: LCA								

Client Sample ID: Method Blank

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

Lab Sample ID: MB 140-42523/1-B

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

Client Sample ID: Method Blank

Date Collected: N/A

Lab Sample ID: MB 140-42561/1-B

Lab Sample ID: MB 140-42711/1-B

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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:11	JRC	TAL KNX
	Instrumer	it ID: LCA								

Client Sample ID: Method Blank

Date Collected: N/A

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:47	JRC	TAL KNX

Client Sample ID: Lab Control Sample

Date Collected: N/A

Date Received: N/A

Lab Sample ID: LCS 140-42523/2-

Matrix: Air

9/21/2020

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	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:13	JRC	TAL KNX
	Instrumer	it ID: LCA								

Eurofins TestAmerica, Knoxville

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Job ID: 140-20288-1

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

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42561/2-B

Date Collected: N/A 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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:29	JRC	TAL KNX
	Instrumer	t ID: LCA								

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

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-42523/3-B

Date Collected: N/A Matrix: Air

Date Received: N/A

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

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

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-42711/3-B

Date Collected: N/A Matrix: Air

Date Received: N/A

lethod	Run	Factor	Amount 1 Sample	Amount	Number	or Analyzed	Analyst	Lab
lone			1 Comple	401	10744	00/44/00 44:00	D14/0	
			i Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
plit			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
37 (modified)		1			42757	09/15/20 12:14	JRC	TAL KNX
3		7 (modified)	7 (modified) 1	7 (modified) 1	7 (modified) 1	7 (modified) 1 42757	7 (modified) 1 42757 09/15/20 12:14	7 (modified) 1 42757 09/15/20 12:14 JRC

Laboratory References:

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

Eurofins TestAmerica, Knoxville

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Matrix: Air

Matrix: Air

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC Job ID: 140-20288-1 Project/Site: VES CB Inlet - M0010

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				
	AFCEE	N/A				
ANAB	Dept. of Defense ELAP	L2311	02-13-22			
ANAB	Dept. of Energy	L2311.01	02-13-22			
ANAB	ISO/IEC 17025	L2311	02-13-22			
ANAB	ISO/IEC 17025	L2311	02-14-22			
Arkansas DEQ	State	88-0688	06-17-21			
California	State	2423	06-30-21			
Colorado	State	TN00009	02-28-21			
Connecticut	State	PH-0223	09-30-21			
Florida	NELAP	E87177	07-01-21			
Georgia (DW)	State	906	12-11-22			
Hawaii	State	NA	12-11-21			
Kansas	NELAP	E-10349	11-01-20			
Kentucky (DW)	State	90101	01-01-21			
Louisiana	NELAP	LA110001	12-31-12 *			
Louisiana	NELAP	83979	06-30-21			
Louisiana (DW)	State	LA019	12-31-20			
Maryland	State	277	03-31-21			
Michigan	State	9933	12-11-22			
Nevada	State	TN00009	07-31-21			
New Hampshire	NELAP	299919	01-17-21			
New Jersey	NELAP	TN001	07-01-21			
New York	NELAP	10781	03-31-21			
North Carolina (DW)	State	21705	07-31-21			
North Carolina (WW/SW)	State	64	12-31-20			
Ohio VAP	State	CL0059	06-02-23			
Oklahoma	State	9415	08-31-21			
Oregon	NELAP	TNI0189	01-02-21			
Pennsylvania	NELAP	68-00576	12-31-20			
Tennessee	State	02014	12-11-22			
Texas	NELAP	T104704380-18-12	08-31-21			
US Fish & Wildlife	US Federal Programs	058448	07-31-21			
USDA	US Federal Programs	P330-19-00236	08-20-22			
Utah	NELAP	TN00009	07-31-21			
Virginia	NELAP	460176	09-14-21			
Washington	State	C593	01-19-21			
West Virginia (DW)	State	9955C	01-01-21			
West Virginia DEP	State	345	05-01-21			
Wisconsin	State	998044300	08-31-21			

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

Method Summary

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

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

Protocol References:

EPA = US Environmental Protection Agency

Source Air Split

None = None

Split

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

TAL KNX

None

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Sample Summary

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

Job ID: 140-20288-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asse
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
40-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
40-20288-4	88-4 QF-2328 VES BC INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE		09/01/20 00:00	09/04/20 12:35	
40-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
40-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
40-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
10-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	
40-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
40-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
40-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
40-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	

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



Environment Testing TestAmerica

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

Laboratory Deliverable Tu	rnaround Requirements:
Analytical Due Date:	21 Days from Lab Receipt
(Review-Released Data)	
Data Package Due Date:	28 Days from Lab Receipt
Data : astago Dao Dato.	20 Bayo nom Eas (1000)pt
Laboratory Destination:	Eurofins TestAmerica
	5815 Middlebrook Pike
	Knoxville, TN 37921
Lab Phone Number:	865.291.3000

Analytical Testing QC Requirements:

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

Project Deliverables:

Report analytical results on TALS Reports and in data packages. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Courier:

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

Preservation Requirements:

Hand Deliver



Field Sample No:/Sample	Run	Sample Collection	Project QC Require	Sample Bottle/		40-20288 Chain of Custody
Coding ID	No.	Date	-ments	Container	Sample Type/Analysis	Analytical Specifications
QF-2322 VES CB Inlet R1 M0010 Filter	1	9/1/20		125 mL HDPE Wide- Mouth Bottle	Particulate Filter (90 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
					Method 0010 Train	solvent extraction of the Particulate Filter sample.
					HFPO-DA Analysis	Knoxville: Analyze for HFPO-DA.
QF-2323 VES CB Inlet R1 M0010 FH of Filter Holder & Probe MeOH Rinse	1	9/1/20		125 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the Particulate Filter extraction.
					Method 0010 Train	
					HFPO-DA Analysis	
QF-2324 VES CB Inlet R1 M0010	1	1 15		XAD-2 Resin Tube	XAD-2 Resin Tube	Knoxville: Spike sample with the Isotope Dilution Internal Standard
XAD-2 Resin Tube		9/1/20			Method 0010 Train	(IDIS) at the regular level. Use the Back-Half Glassware Rinse and the
					HFPO-DA Analysis	Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample.
						Knoxville: Analyze for HFPO-DA.

Environment Testing TestAmerica

Field Sample No:/Sample	Run	Sample Collection	Project QC Require	Sample Bottle/		
Coding ID	No.	Date	-ments	Container	Sample Type/Analysis	Analytical Specifications
QF-2325 VES CB Inlet R1 M0010 BH of Filter Holder & Coil Condenser	1	ol i		125 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.
MeOH Rinse		9/1/20			Method 0010 Train	Knoxville: Analyze for HFPO-DA.
					HFPO-DA Analysis	
QF-2326 VES CB Inlet R1 M0010 Impingers 1,2 & 3	1	al.1		500 mL HDPE Wide- Mouth Bottle	Impinger #1, #2 & #3 Condensate	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis.
Condensate		11/20			Method 0010 Train	16
					HFPO-DA Analysis	Knoxville: Analyze for HFPO-DA.
QF-2327 VES CB Inlet R1 M0010	1			250 mL HDPE Wide-	Impinger Glassware Methanol/5% Ammonium	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
Impinger Glassware MeOH Rinse		9/1120		Mouth Bottle	Hydroxide Rinse	
Minse		, -			Method 0010 Train	
					HFPO-DA Analysis	
QF-2328 VES CB Inlet R1 M0010 Breakthrough XAD-2 Resin Tube	1	9/1/2		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 Train	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction.
		1,190			Wethod 0010 Train	
					HFPO-DA Analysis	Knoxville: Analyze for HFPO-DA.
QF-2329 VES CB Inlet R2 M0010 Filter	2	al.I		125 mL HDPE Wide- Mouth Bottle	Particulate Filter (90 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
		1/1/20			Method 0010 Train	solvent extraction of the Particulate Filter sample.
					HFPO-DA Analysis	Knoxville: Analyze for HFPO-DA.
QF-2330 VES CB Inlet R2 M0010 FH of Filter Holder & Probe MeOH Rinse	2	9/1/20		125 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the Particulate Filter extraction.
					Method 0010 Train	
					HFPO-DA Analysis	

Environment Testing TestAmerica

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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
QF-2331 VES CB Inlet R2 M0010 XAD-2 Resin Tube	2	91120		XAD-2 Resin Tube	XAD-2 Resin Tube Method 0010 Train HFPO-DA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample.
QF-2332 VES CB Inlet R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	2	9/1/20		125 mL HDPE Wide- Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train	Knoxville: Analyze for HFPO-DA. Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Knoxville: Analyze for HFPO-DA.
QF-2333 VES CB Inlet R2 M0010 Impingers 1,2 & 3 Condensate	2	gliloo		500 mL HDPE Wide- Mouth Bottle	Impinger #1, #2 & #3 Condensate Method 0010 Train HFPO-DA Analysis	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. Knoxville: Analyze for HFPO-DA.
QF-2334 VES CB Inlet R2 M0010 Impinger Glassware MeOH Rinse	2	9/1/20		250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
QF-2335 VES CB Inlet R2 M0010 Breakthrough XAD-2 Resin Tube	2	9/1/20		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 Train HFPO-DA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Knoxville: Analyze for HFPO-DA.
QF-2336 VES CB Inlet R3 M0010 Filter	3	9(1/20		125 mL HDPE Wide- Mouth Bottle	Particulate Filter (90 mm Whatman Glass Microfiber) Method 0010 Train HFPO-DA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. Knoxville: Analyze for HFPO-DA.

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



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
QF-2337 VES CB Inlet R3 M0010 FH of Filter Holder & Probe MeOH Rinse	3	9/1/20		125 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the Particulate Filter extraction.
					Method 0010 Train HFPO-DA Analysis	
QF-2338 VES CB Inlet R3 M0010 XAD-2 Resin Tube	3			XAD-2 Resin Tube	XAD-2 Resin Tube Method 0010 Train	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the
		9/1/20			HFPO-DA Analysis	Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample.
						Knoxville: Analyze for HFPO-DA.
QF-2339 VES CB Inlet R3 M0010 BH of Filter Holder & Coil Condenser	3	9/1/20		125 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.
MeOH Rinse					Method 0010 Train	Knoxville: Analyze for HFPO-DA.
					HFPO-DA Analysis	
QF-2340 VES CB Inlet R3 M0010 Impingers 1,2 & 3 Condensate	3	9/1/20		500 mL HDPE Wide- Mouth Bottle	Impinger #1, #2 & #3 Condensate	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis.
Condensate		111/20			Method 0010 Train	Knoxville: Analyze for HFPO-DA.
					HFPO-DA Analysis	
QF-2341 VES CB Inlet R3 M0010 Impinger Glassware MeOH	3	9/1/20		250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
Rinse		111100			Method 0010 Train	
					HFPO-DA Analysis	
QF-2342 VES CB Inlet R3 M0010 Breakthrough XAD-2 Resin Tube	3	9/1/20		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 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 Analysis

Knoxville: Analyze for HFPO-DA.

Please fill in the following information:

Comments
(Please write "NONE" if no comment applicable)

Environment Testing TestAmerica

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Sample Receipt Log and Condition of the Samples Upon Receipt:

	dentities of any samples that were listed but were not found in the sample shipment.	None	
(2) Record the s coolers trans	ample shipping cooler temperature of all sporting samples listed on this RFA:	RT1.6/CT1.6'C	
(3) Record any a	apparent sample loss/breakage.	NOMP	
(4) Record any u shipment of	unidentified samples transported with this samples:	MNF-	
(5) Indicate if all project's req	samples were received according to the uired specifications (i.e. no nonconformances)	AZ YOUTZU ON, CARTUNED ANAM:	<i>L</i> 7
Custody Tra	nsfer:		
Relinquished By:	Patrick Mosy	Pamboll	9/3/20 2030
Accepted By:	Name Name	FTA KNOX Company	Date/Time
Relinquished By:	Doy Coll	ETA KNOX Company	9/4/30 /235 Date/Time
Accepted By:	Name	Ecompany Company	Date/Time 9-4-30 13:35 Date/Time
Relinquished By:	Name	Company	Date/Time
Accepted By:			
Relinquished By:	Name	Company	Date/Time
· •	Name	Company	Date/Time
Accepted By:			

Company

Name

Date/Time

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

Loc: 140 **20288**

Log In Number:

1. Act the supplies containers vereived insect Containers, Broken	Review Items	Yes	sk.	¥.	If No, what was the problem?	Comments/Actions Taken
inters received intact? Cooler Out of Temp, Client Contacted, proceed/Cancel Contacted, proce	1. Are the shipping containers intact?	7		_	□ Containers, Broken	
containers received intact? SST: 10°C) SST: 10°C) SST: 10°C) SST: 10°C) SST: 10°C) SST: 10°C) Containers received intact? Containers in appropriate containers? Containers in appropriate containers? Containers in appropriate containers? Containers in interest in appropriate containers in interest interest in interest in interest in interest in interest in interest interes	2. Were ambient air containers received intact?		\		☐ Checked in lab	
re within limins? (> freezing Cooler Out of Temp, Client SST: 10°C) Cooler Out of Temp, Same Bay Receipt Cooler Out of Temp, Same Bay Receipt Containers Broken Containers Broken Containers Broken Sample Received, Not on COC Sample Received, Not on COC Sample Received on COC Contacted Sample Broken Contacted Containers Broken Sample Collection noted? Containers Broken Contacted Containers Broken Sample Collection noted? Containers Broken Contacted Containers Broken Contacted Containers Broken Sample Collection noted? Containers Broken Contacted Containers Broken Containers Containers Br	3. The coolers/containers custody seal if present, is it intact?				D Yes D NA	
Contacted, Proceed/Cancel	4. Is the cooler temperature within limits? (> freezing				☐ Cooler Out of Temp, Client	
Coolet Out of Temp, Same Day	temp. of water to 6°C, VOST: 10°C)	/			Contacted, Proceed/Cancel	
containers received intact? Containers, Broken	Thermometer ID: St.68 Correction factor: 0-0				□ Cooler Out of Temp, Same Day Receipt	
Containers? Containers, Improper; Client	5. Were all of the sample containers received intact?				□ Containers, Broken	
COC Incorrect/Incomplete	6. Were samples received in appropriate containers?			***************************************	☐ Containers, Improper; Client Contacted; Proceed/Cancel	
COC Incorrect/Incomplete	7. Do sample container labels match COC?				□ COC & Samples Do Not Match	
COC, Not received Contacted Coc Incorrect/Incomplete DH test strip lot number: Coc Coc Incorrect/Incomplete DH test strip lot number: Coc Incorrect/Incomplete Description DH test strip lot number: Coc Incorrect/Incomplete Description	(IDs, Dates, Times)	`			COC Incorrect/Incomplete	
Sample Received Compared		1			COC Not Received	
COC; No Date/Time; Client Contacted Contacted Contacted Contacted Contacted Contacted Contacted Contacted CoC Incorrect/Incomplete DH test strip lot number:	8. Were all of the samples listed on the COC received?	/			 □ Sample Received, Not on COC □ Sample on COC, Not Received 	
Contacted Contacted	9. Is the date/time of sample collection noted?				☐ COC; No Date/Time; Client	The state of the s
Sampler Not Listed on COC				/	Contacted	
COC Incorrect/Incomplete DH test strip lot number: COC No tests on COC COC Coc Incorrect/Incomplete Box 16A: pH COC Incorrect/Incomplete Box 16A: pH COC Incorrect/Incomplete Preservation COC Incorrect/Incomplete Preservation COC Incorrect/Incomplete Box 16A: pH COC Incorrect/Incomplete Preservation Coc Incorrect/I	10. Was the sampler identified on the COC?		_		□ Sampler Not Listed on COC	
COC Incorrect/Incomplete Box 16A: pH	11. Is the client and project name/# identified?	//			□ COC Incorrect/Incomplete	pH test strip lot number:
COC Incorrect/Incomplete Box 16A: pH	12. Are tests/parameters listed for each sample?	1/	***		☐ COC No tests on COC	
COC Incorrect/Incomplete Box 16A: pH	13. Is the matrix of the samples noted?	//	ab de Ma		☐ COC Incorrect/Incomplete	
	14. Was COC relinquished? (Signed/Dated/Timed)		***************************************		☐ COC Incorrect/Incomplete	PH ion
Date: 9-7-20	15. Were samples received within holding time?				☐ Holding Time - Receipt	
(See box 16A) Exp Date: Incorrect Preservative Analyst: Headspace (VOA only) Time: I Residual Chlorine Time: I If no, notify lab to adjust I Project missing info Date: 9-7-20	16. Were samples received with correct chemical				☐ pH Adjusted, pH Included	Lot Number:
Incorrect Preservative Analyst: Headspace (VOA only) Date: Residual Chlorine Time: If no, notify lab to adjust If no, notify lab to adjust Date: 4-7-20	preservative (excluding Encore)?				(See box 16A)	Exp Date:
	a de la companya de l			_	□ Incorrect Preservative	Analyst:
C Residual Chlorine 11me: C If no, notify lab to adjust C If no project missing info Date: 9-7-20	17. Were VOA samples received without headspace?		_	_	☐ Headspace (VOA only)	Date:
	18. Did you check for residual chlorine, if necessary?	****		\	□ Residual Chlorine	ı me:
	(e.g. 1613B, 1668) Chlorine test strip lot number:			,		
Date: 9-7-20	19. For 1613B water samples is pH<9?			/	🛭 If no, notify lab to adjust	
14004326 PM Instructions: ceiving Associate: Name Of Date: 9-7-20	20. For rad samples was sample activity info. Provided?				□ Project missing info	
Ruga Usangaga Date: 9-7-20	1400H3AL					
Murya Managan Date: 9-7-20						
	Mary	\{		Date: 6	معرا-١	QA026R32.doc, 062719

VES 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: 140-20289-1

Client Project/Site: VES CB Outlet - M0010

For:

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

Attn: Michael Aucoin

Authorized for release by: 9/21/2020 2:18:18 PM

Courtney Adkins, Project Manager II

Swine of Albania

(865)291-3019

courtney.adkins@eurofinset.com

Review your project results through Total Access

Have a Question?

Ask
The Expert

Visit us at:

www.eurofinsus.com/Env

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

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

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

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Definitions/Glossary

Client: The Chemours Company FC, LLC

Job ID: 140-20289-1

Project/Site: VES CB Outlet - M0010

Qualifiers

1 4	N/A	C
ш	V	J

Qualifier	Qualifier Description

B Compound was found in the blank and sample.

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid

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: VES CB Outlet - M0010

Job ID: 140-20289-1

Job ID: 140-20289-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative 140-20289-1

Sample Receipt

The samples were received on September 4, 2020 at 12:35 PM in good condition and properly preserved. The temperature of the cooler at receipt was 0.8° C.

LCMS

Method 537 (modified): The required dilution factor for the following samples were higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): QF-2343,2344 VES BC OUTLET R1 M0010 FH (140-20289-1), QF-2350,2351 VES BC OUTLET R2 M0010 FH (140-20289-5) and QF-2357,2358 VES BC OUTLET R3 M0010 FH (140-20289-9). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: QF-2343,2344 VES BC OUTLET R1 M0010 FH (140-20289-1), QF-2350,2351 VES BC OUTLET R2 M0010 FH (140-20289-5) and QF-2357,2358 VES BC OUTLET R3 M0010 FH (140-20289-9). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH (140-20289-2), QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH (140-20289-6), QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH (140-20289-10) and QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20289-12). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH (140-20289-2), QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH (140-20289-6), QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH (140-20289-10) and QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20289-12) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

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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Job ID: 140-20289-1

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

Lab Sample ID: 140-20289-1

FΗ

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D	Method	Prep Type
HFPO-DA	2.46	0.0991	0.0575 ug/Sample	1	537 (modified)	Total/NA

Client Sample ID: QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH

Client Sample ID: QF-2343,2344 VES BC OUTLET R1 M0010

Lab Sample ID: 140-20289-2

Analyte Dil Fac D Method RL MDL Unit Result Qualifier **Prep Type** HFPO-DA 0.608 0.00800 0.00700 ug/Sample 5 537 (modified) Total/NA

Client Sample ID: QF-2347 VES BC OUTLET R1 M0010 IMP 1.2&3 CONDENSATE

Lab Sample ID: 140-20289-3

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D	Method	Prep Type
HFPO-DA	0.0897 B	0.0585	0.00965 ug/Sample		537 (modified)	Total/NA

Client Sample ID: QF-2349 VES BC OUTLET R1 M0010 **BREAKTHROUGH XAD-2 RESIN TUBE**

Lab Sample ID: 140-20289-4

Analyte Result Qualifier **MDL** Unit Dil Fac D Method **Prep Type** HFPO-DA 0.0603 0.00160 0.00140 ug/Sample 537 (modified) Total/NA

Client Sample ID: QF-2350,2351 VES BC OUTLET R2 M0010 FΗ

Lab Sample ID: 140-20289-5

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D	Method	Prep Type
HFPO-DA	2.67	0.100	0.0580 ug/Sample	1	537 (modified)	Total/NA

Client Sample ID: QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH

Lab Sample ID: 140-20289-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.53		0.0320	0.0280	ug/Sample	20		537 (modified)	Total/NA

Client Sample ID: QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20289-7

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D	Method	Prep Type
HFPO-DA	1.80 B	0.0585	0.00965 ug/Sample	1	537 (modified)	Total/NA

Client Sample ID: QF-2356 VES BC OUTLET R2 M0010 **BREAKTHROUGH XAD-2 RESIN TUBE**

Analyte Result Qualifier RL MDL Unit Dil Fac D Method Prep Type

0.00160

0.00140 ug/Sample

Client Sample ID: QF-2357,2358 VES BC OUTLET R3 M0010

0.0400

Lab Sample ID: 140-20289-9

Total/NA

9/21/2020

537 (modified)

Lab Sample ID: 140-20289-8

FΗ

HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac I) Method	Prep Type
HFPO-DA	2.29		0.100	0.0580	ug/Sample	1	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

Job ID: 140-20289-1

Client Sample ID: QF-2359,2360,2362 VES BC OUTLET R3

Lab Sample ID: 140-20289-10

M0010 BH

1,2&3 CONDENSATE

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D	Method	Prep Type
HFPO-DA	0.950	0.0160	0.0140 ug/Sample	10	537 (modified)	Total/NA

Lab Sample ID: 140-20289-11 Client Sample ID: QF-2361 VES BC OUTLET R3 M0010 IMP

Analyte Result Qualifier RL **MDL** Unit Dil Fac D Method **Prep Type** HFPO-DA 0.135 B 0.0570 0.00941 ug/Sample 537 (modified) Total/NA

Client Sample ID: QF-2363 VES BC OUTLET R3 M0010 Lab Sample ID: 140-20289-12 **BREAKTHROUGH XAD-2 RESIN TUBE**

Result Qualifier Analyte RL **MDL** Unit Dil Fac D Method **Prep Type** HFPO-DA 0.704 0.00800 0.00700 ug/Sample 5 537 (modified) Total/NA

Job ID: 140-20289-1

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

Client Sample ID: QF-2343,2344 VES BC OUTLET R1 M0010

Lab Sample ID: 140-20289-1

FΗ

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 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	2.46		0.0991	0.0575	ug/Sample		09/09/20 11:52	09/16/20 17:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	91		25 - 150				09/09/20 11:52	09/16/20 17:23	1

Client Sample ID: QF-2345,2346,2348 VES BC OUTLET R1 Lab Sample ID: 140-20289-2

M0010 BH

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 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	0.608		0.00800	0.00700	ug/Sample	_	09/09/20 15:00	09/19/20 12:44	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	70		25 - 150				09/09/20 15:00	09/19/20 12:44	5

Client Sample ID: QF-2347 VES BC OUTLET R1 M0010 IMP

Lab Sample ID: 140-20289-3

1,2&3 CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
HFPO-DA	0.0897	В	0.0585	0.00965	ug/Sample		09/14/20 11:33	09/15/20 13:59	1		
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
13C3 HFPO-DA	109		25 - 150				09/14/20 11:33	09/15/20 13:59	1		

Client Sample ID: QF-2349 VES BC OUTLET R1 M0010 Lab Sample ID: 140-20289-4

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluor									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0603		0.00160	0.00140	ug/Sample	_	09/09/20 15:00	09/19/20 12:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	50		25 - 150				09/09/20 15:00	09/19/20 12:53	1

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

Job ID: 140-20289-1

Client Sample ID: QF-2350,2351 VES BC OUTLET R2 M0010

Lab Sample ID: 140-20289-5

FΗ

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified Analyte	•	I Substan Qualifier	Ces RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.67		0.100	0.0580	ug/Sample	_	09/09/20 11:52	09/16/20 17:32	1
Isotope Dilution 13C3 HFPO-DA	%Recovery 95	Qualifier	<u>Limits</u> 25 - 150				Prepared 09/09/20 11:52	Analyzed 09/16/20 17:32	Dil Fac

Client Sample ID: QF-2352,2353,2355 VES BC OUTLET R2

Lab Sample ID: 140-20289-6

M0010 BH

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluor	inated Alky	l Substan	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.53		0.0320	0.0280	ug/Sample		09/09/20 15:00	09/19/20 13:02	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	50		25 - 150				09/09/20 15:00	09/19/20 13:02	20

Client Sample ID: QF-2354 VES BC OUTLET R2 M0010 IMP Lab Sample ID: 140-20289-7

1,2&3 CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
HFPO-DA	1.80	В	0.0585	0.00965	ug/Sample		09/14/20 11:33	09/15/20 14:08	1		
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
13C3 HFPO-DA	106		25 - 150				09/14/20 11:33	09/15/20 14:08	1		

Client Sample ID: QF-2356 VES BC OUTLET R2 M0010 Lab Sample ID: 140-20289-8

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluor	rinated Alky	l Substand	ces						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0400		0.00160	0.00140	ug/Sample	_	09/09/20 15:00	09/19/20 13:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	80		25 - 150				09/09/20 15:00	09/19/20 13:11	1

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

Job ID: 140-20289-1

Client Sample ID: QF-2357,2358 VES BC OUTLET R3 M0010

Lab Sample ID: 140-20289-9

FΗ

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified)	- Fluorinated Alkyl Sub	stances						
Analyte	Result Qualit	fier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.29	0.100	0.0580	ug/Sample	_	09/09/20 11:52	09/16/20 17:41	1
Isotope Dilution	%Recovery Quality	fier Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	97	25 - 150				09/09/20 11:52	09/16/20 17:41	1

Client Sample ID: QF-2359,2360,2362 VES BC OUTLET R3 Lab Sample ID: 140-20289-10

M0010 BH

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 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	0.950		0.0160	0.0140	ug/Sample		09/09/20 15:00	09/19/20 13:20	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	101		25 - 150				09/09/20 15:00	09/19/20 13:20	10

Client Sample ID: QF-2361 VES BC OUTLET R3 M0010 IMP

Lab Sample ID: 140-20289-11

1,2&3 CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified	ethod: 537 (modified) - Fluorinated Alkyl Substances										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
HFPO-DA	0.135	В	0.0570	0.00941	ug/Sample		09/14/20 11:33	09/15/20 14:17	1		
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
13C3 HFPO-DA	106		25 - 150				09/14/20 11:33	09/15/20 14:17	1		

Client Sample ID: QF-2363 VES BC OUTLET R3 M0010 Lab Sample ID: 140-20289-12

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - FI	uorinated Alkyl Substan	ces					
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.704	0.00800	0.00700 ug/Sample		09/09/20 15:00	09/19/20 13:29	5
Isotope Dilution	%Recovery Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	99	25 - 150			09/09/20 15:00	09/19/20 13:29	5

Default Detection Limits

Client: The Chemours Company FC, LLC Job ID: 140-20289-1

Project/Site: VES CB Outlet - M0010

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 Job ID: 140-20289-1

Project/Site: VES CB Outlet - M0010

Method: 537 (modified) - Fluorinated Alkyl Substances

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

140-20289-1 QF-2343,2344 VES BC OUTLE* 91 140-20289-2 QF-2345,2346,2348 VES BC 70 OUTLET R1 M0010 BH 140-20289-3 QF-2347 VES BC OUTLET R1 M0010 IMP 1,283 CONDENSATE 140-20289-4 QF-2349 VES BC OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-6 QF-2352,2351 VES BC OUTLE* P1 R2 M0010 IFH R2-20289-7 QF-2352,2351 VES BC OUTLE* P2 R2 M0010 IMP 1,283 CONDENSATE 140-20289-8 QF-2352,2353,2555 VES BC OUTLET R2 M0010 IMP 1,283 CONDENSATE R2-20289-8 QF-2352,2353 VES BC OUTLE* P2 M0010 IMP 1,283 CONDENSATE R40-20289-9 QF-2354 VES BC OUTLE* P2 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE R40-20289-1 QF-2355,2358 VES BC OUTLE* P3 R3 M0010 FH R5-2355,2358 VES BC OUTLE* R3 M0010 IMP 1,283 CONDENSATE R5-2355,2358 VES BC OUTLE* R3 M0010 IMP 1,283 CONDENSATE R5-2355,2358 VES BC OUTLE* R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE R5-2355,2358 VES BC OUTLE* R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE R5-2356,2358 VES BC OUTLE* R3 M0010 IMP 1,283 CONDENSATE R5-2356,2358 VES BC OUTLE* R3 M0010 IMP 1,283 CONDENSATE R5-2356,2358 VES BC OUTLE* R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/3-B Lab Control Sample UCSD 140-42566/3-B Lab Control Sample Dup R5-140-42561/3-B Method Blank R6-140-42561/3-B Method Blank R6-140-4251/14-B Method Blank R6-140-4251				Percent Isotope Dilution Recovery (Acceptance Limits)
140-20289-1 QF-2343,2344 VES BC OUTLE* 140-20289-2 QF-2345,2246,2248 VES BC 70 OUTLET R1 M0010 BH 140-20289-3 QF-2347 VES BC OUTLET R1 M0010 IMP 1,283 CONDENSATE 40-20289-4 QF-2349 VES BC OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-5 QF-2352,2351 VES BC OUTLE* R2 M0010 FH 140-20289-6 QF-2352,2353 VES BC OUTLET R2 R2 M0010 IMP 1,283 CONDENSATE 40-20289-7 QF-2352,2353 VES BC OUTLET R2 M0010 IMP 1,283 CONDENSATE 140-20289-8 QF-2358 VES BC OUTLET R2 M0010 IMP 1,283 CONDENSATE 140-20289-9 QF-2358 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-1 QF-2356 VES BC OUTLET R2 R3 M0010 FH R40-20289-1 QF-2356,2358 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-1 QF-2357,2358 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-1 QF-2357,2588 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-1 QF-2358 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-1 QF-2358 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-1 QF-2358 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-1 QF-2358 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-1 QF-2358 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/3-B Lab Control Sample P76 LCS 140-42561/3-B Lab Control Sample P76 LCS 140-42561/3-B Lab Control Sample Dup MB 140-42561/1-B Method Blank MB 140-42561/1-B Method				
140-20289-2	Lab Sample ID	Client Sample ID	(25-150)	
OUTLET R1 M0010 BH 140-20289-3 OF-2347 VES BC OUTLET R1 M0010 IMP 1,283 CONDENSATE 140-20289-4 QF-2349 VES BC OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-5 QF-2352,2351 VES BC OUTLET R2 M0010 IMP 1,283 CONDENSATE R2 M0010 FH 140-20289-6 QF-2352,2353,2355 VES BC QUTLET R2 M0010 BH 140-20289-7 QF-2354 VES BC OUTLET R2 M0010 IMP 1,283 CONDENSATE 140-20289-8 QF-2357,2358 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE QF-2357,2358 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-1 QF-2357,2358 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-11 QF-2359,2360,2362 VES BC QF-2367 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-11 QF-2361 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE 140-20289-12 QF-2361 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/3-B Lab Control Sample 87 LCS 140-42561/3-B Lab Control Sample 97 LCS 140-42566/3-B Lab Control Sample 97 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42561/1-B Method Blank 88 MB 140-42561/1-B Method Blank MB 140-42711/14-B MEthod MB MB 140-42711/14-B MEthod MB MB 140-42711/14-B MEthod MB MB 140-42711/14-B MEthod MB	140-20289-1	QF-2343,2344 VES BC OUTLE	91	
140-20289-3 GF-2347 VES BC OUTLET R1 109 M0010 IMP 1,283 CONDENSATE 140-20289-4 GF-2349 VES BC OUTLET R1 50 M0010 BREAKTHROUGH XAD-2 RESIN TUBE GF-2350,2351 VES BC OUTLET R1 95 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE GF-2352,2353,2355 VES BC 50 GF-2352,2353,2355 VES BC GF-2352,2353 VES BC GF-2352,2353 VES BC GF-2352,2358 VE	140-20289-2	QF-2345,2346,2348 VES BC	70	
M0010 IMP 1_283				
CONDENSATE QF-2349 VES BC OUTLET R1 50 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-5 QF-2350_2351 VES BC OUTLET 95 R2 M0010 FH 40-20289-6 QF-2350_2355 VES BC 50 OUTLET R2 M0010 BH 140-20289-7 QF-2354 VES BC OUTLET R2 106 M0010 IMP 1,283 CONDENSATE 140-20289-8 QF-2356 VES BC OUTLET R2 80 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-9 QF-2357_2358 VES BC OUTLET 97 R3 M0010 FH 140-20289-9 QF-2357_2358 VES BC OUTLET 97 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-10 QF-2359_2360_2362 VES BC 101 OUTLET R3 M0010 BH 140-20289-11 QF-2361 VES BC OUTLET R3 106 M0010 IMP 1,283 CONDENSATE 140-20289-12 QF-2363 VES BC OUTLET R3 99 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/2-B Lab Control Sample 87 LCS 140-42566/2-B Lab Control Sample 97 LCSD 140-42561/3-B Lab Control Sample 97 LCSD 140-42561/3-B Lab Control Sample Dup 47 LCSD 140-42561/3-B Method Blank 88 MB 140-42561/1-B Method Blank 88 MB 140-42561/1-B Method Blank 88 MB 140-42561/1-B Method Blank 88 MB 140-42711/14-B Method Blank 85 MB 140-42711/14-B Method Blank 86 MB 140-42711/14-B Method Blank 86	140-20289-3		109	
140-20289-4		•		
M0010 BREAKTHROUGH	140 20200 4			
XAD-2 RESIN TUBE QF-2350,2251 VES BC OUTLET R2 M0010 FH 140-20289-6 QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH QF-2354 VES BC OUTLET R2 M0010 IMP 1,283 CONDENSATE QF-2356 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-9 QF-2357,2358 VES BC OUTLET R3 M0010 FH 140-20289-10 QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH QF-2359,2360,2362 VES BC QF-2361 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE QF-2361 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE QF-2361 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE QF-2361 VES BC OUTLET R3 M0010 IMP 1,283 CONDENSATE QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/2-B Lab Control Sample QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/2-B Lab Control Sample QF-23666/2-B Lab Control Sample QF-23666/3-B Lab Control Sample Dup A7 LCSD 140-42561/3-B LAB CONTROL SAMPLE DUP A	140-20209-4		50	
140-20289-5 QF-2350,2351 VES BC OUTLET 95 R2 M0010 FH				
R2 M0010 FH	140-20289-5		95	
140-20289-6 QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH 140-20289-8 QF-2354 VES BC OUTLET R2 M010 BH AVAD-2 RESIN TUBE 140-20289-11 QF-2354 VES BC OUTLET R3 M010 BH AVAD-2 RESIN TUBE 140-20289-12 QF-2365 VES BC OUTLET R3 M010 BH AVAD-2 RESIN TUBE 140-20289-11 QF-2369,2360,2362 VES BC DITET R3 M010 BH AVAD-2 RESIN TUBE 140-20289-11 QF-2369 VES BC OUTLET R3 M010 BH AVAD-2 RESIN TUBE 140-20289-12 QF-2363 VES BC OUTLET R3 M010 BH AVAD-2 RESIN TUBE 140-20289-12 QF-2363 VES BC OUTLET R3 M010 BH AVAD-2 RESIN TUBE 140-20289-12 QF-2363 VES BC OUTLET R3 P9 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-42561/2-B Lab Control Sample P3 R5 LCS 140-42566/2-B Lab Control Sample P4 R5 LCS 140-42566/3-B Lab Control Sample P5 R5 LCS 140-42566/3-B Lab Control Sample D4 P5 LCS 140-42566/3-B Lab Control Sample D4 P5 LCS 140-4256/3-B LCS 140-425	140 20200 0		00	
140-20289-7 QF-2354 VES BC OUTLET R2 106 M0010 IMP 1_2&3 CONDENSATE 140-20289-8 QF-2356 VES BC OUTLET R2 80 M0010 BREAKTHROUGH XAD-2 RESIN TUBE VAD-2 RESIN TUBE VAD-20289-10 QF-2359,2360,2362 VES BC 101 VAD-20289-11 QF-2361 VES BC OUTLET R3 VAD-20289-11 QF-2361 VES BC OUTLET R3 VAD-20289-12 QF-2363 VES BC OUTLET R3 VAD-20289-12 QF-2363 VES BC OUTLET R3 VAD-2 RESIN TUBE VAD-2 RESIN	140-20289-6		50	
M0010 IMP 1,2&3				
CONDENSATE 140-20289-8 QF-2356 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 140-20289-9 QF-2357,2358 VES BC OUTLET R3 M0010 FH 140-20289-10 QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH 140-20289-11 QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3 CONDENSATE 140-20289-12 QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/2-B Lab Control Sample LCS 140-42566/3-B Lab Control Sample DUP LCSD 140-42566/3-B Lab Control Sample Dup B3 LCSD 140-42561/1-B Lab Control Sample Dup 47 LCSD 140-42561/1-B Method Blank MB 140-42711/14-B	140-20289-7	QF-2354 VES BC OUTLET R2	106	
140-20289-8 QF-2356 VES BC OUTLET R2		M0010 IMP 1,2&3		
M0010 BREAKTHROUGH				
XAD-2 RESIN TUBE QF-2357,2358 VES BC OUTLET R3 M0010 FH 140-20289-10 QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH 140-20289-11 QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3 CONDENSATE 140-20289-12 QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/2-B Lab Control Sample LCS 140-42566/2-B Lab Control Sample Dup LCSD 140-42566/3-B Lab Control Sample Dup LCSD 140-42566/3-B Lab Control Sample Dup LCSD 140-42566/3-B Lab Control Sample Dup A7 LCSD 140-42711/3-B Lab Control Sample Dup 103 MB 140-42561/1-B Method Blank B 140-42561/1-B Method Blank MB 140-42561/1-B Method Blank MB 140-42566/1-B Method Blank MB 140-42566/1-B Method Blank MB 140-42561/1-B Method Blank MB 140-42711/14-B Method Blank MB 140-42711/14-B Method Blank	140-20289-8		80	
140-20289-9 QF-2357,2358 VES BC OUTLET 97 R3 M0010 FH 140-20289-10 QF-2359,2360,2362 VES BC 101 OUTLET R3 M0010 BH 140-20289-11 QF-2361 VES BC OUTLET R3 106 M0010 IMP 1,2&3 CONDENSATE 140-20289-12 QF-2363 VES BC OUTLET R3 99 M0010 BREAKTHROUGH XAD-2 RESIN TUBE 87 LCS 140-42561/2-B Lab Control Sample 76 LCS 140-42711/2-B Lab Control Sample 97 LCSD 140-42566/3-B Lab Control Sample 97 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42561/14-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 85 MB 140-42566/1-B Method Blank 86 MB 140-42566/1-B Method Blank 95 MB 140-42711/14-B Method Blank 95				
R3 M0010 FH 140-20289-10 QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH 140-20289-11 QF-2361 VES BC OUTLET R3 106 M0010 IMP 1,2&3 CONDENSATE 140-20289-12 QF-2363 VES BC OUTLET R3 99 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/2-B Lab Control Sample 87 LCS 140-42711/2-B Lab Control Sample 97 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42711/3-B Lab Control Sample Dup 47 LCSD 140-42561/3-B Lab Control Sample Dup 47 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42561/3-B Lab Control Sample Dup 47 LCSD 140-42561/1-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95	140 20200 0		07	
140-20289-10 QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH 140-20289-11 QF-2361 VES BC OUTLET R3 106 M0010 IMP 1,2&3 CONDENSATE 140-20289-12 QF-2363 VES BC OUTLET R3 99 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/2-B Lab Control Sample 87 LCS 140-42566/2-B Lab Control Sample 97 LCS 140-42561/3-B Lab Control Sample Dup 47 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42711/3-B Lab Control Sample Dup 47 LCSD 140-42711/3-B Lab Control Sample Dup 47 LCSD 140-42566/1-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95	140-20209-9	•	97	
OUTLET R3 M0010 BH 140-20289-11 QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3 CONDENSATE 140-20289-12 QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/2-B Lab Control Sample LCS 140-42566/2-B Lab Control Sample CS 140-42711/2-B Lab Control Sample Dup LCSD 140-42561/3-B Lab Control Sample Dup LCSD 140-42566/3-B Lab Control Sample Dup LCSD 140-42566/3-B Lab Control Sample Dup LCSD 140-42711/3-B Lab Control Sample Dup MB 140-42561/14-B Method Blank MB 140-42561/1-B Method Blank MB 140-42566/1-B Method Blank MB 140-42711/14-B Method Blank	140-20289-10		101	
140-20289-11 QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3				
CONDENSATE 140-20289-12	140-20289-11		106	
140-20289-12 QF-2363 VES BC OUTLET R3 99 M0010 BREAKTHROUGH		M0010 IMP 1,2&3		
M0010 BREAKTHROUGH XAD-2 RESIN TUBE LCS 140-42561/2-B Lab Control Sample 87 LCS 140-42566/2-B Lab Control Sample 97 LCS 140-42711/2-B Lab Control Sample 97 LCSD 140-42561/3-B Lab Control Sample Dup 83 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42711/3-B Lab Control Sample Dup 103 MB 140-42561/14-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95		CONDENSATE		
XAD-2 RESIN TUBE LCS 140-42561/2-B	140-20289-12		99	
LCS 140-42561/2-B Lab Control Sample 87 LCS 140-42566/2-B Lab Control Sample 76 LCS 140-42711/2-B Lab Control Sample 97 LCSD 140-42561/3-B Lab Control Sample Dup 83 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42711/3-B Lab Control Sample Dup 103 MB 140-42561/14-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95				
LCS 140-42566/2-B Lab Control Sample 76 LCS 140-42711/2-B Lab Control Sample 97 LCSD 140-42561/3-B Lab Control Sample Dup 83 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42711/3-B Lab Control Sample Dup 103 MB 140-42561/14-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95	LOC 440 40504/0 D			
LCS 140-42711/2-B Lab Control Sample 97 LCSD 140-42561/3-B Lab Control Sample Dup 83 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42711/3-B Lab Control Sample Dup 103 MB 140-42561/14-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95		•		
LCSD 140-42561/3-B Lab Control Sample Dup 83 LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42711/3-B Lab Control Sample Dup 103 MB 140-42561/14-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95		' '		
LCSD 140-42566/3-B Lab Control Sample Dup 47 LCSD 140-42711/3-B Lab Control Sample Dup 103 MB 140-42561/14-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95		· · · · · · · · · · · · · · · · · · ·		
LCSD 140-42711/3-B Lab Control Sample Dup 103 MB 140-42561/14-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95				
MB 140-42561/14-B Method Blank 88 MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95		·		
MB 140-42561/1-B Method Blank 85 MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95				
MB 140-42566/1-B Method Blank 68 MB 140-42711/14-B Method Blank 95				
MB 140-42711/14-B Method Blank 95				
MB 140-42711/1-B Method Blank 99				
	MB 140-42711/1-B	Method Blank	99	

HFPODA = 13C3 HFPO-DA

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Client: The Chemours Company FC, LLC Job ID: 140-20289-1

Project/Site: VES CB Outlet - M0010

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-42561/14-B Client Sample ID: Method Blank Prep Type: Total/NA

Matrix: Air

Analysis Batch: 42824 Prep Batch: 42561 MB MB Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte Prepared

HFPO-DA 0.000580 ug/Sample 09/09/20 11:52 09/16/20 15:20 ND 0.00100 MB MB

Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 09/09/20 11:52 09/16/20 15:20 88 25 - 150

Lab Sample ID: MB 140-42561/1-B **Client Sample ID: Method Blank**

Matrix: Air

Prep Type: Total/NA **Analysis Batch: 42824** Prep Batch: 42561

MB MB

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 09/09/20 11:52 09/16/20 15:11 $\overline{\mathsf{ND}}$ 0.00100 0.000580 ug/Sample

MB MB Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 09/09/20 11:52 09/16/20 15:11 85 25 - 150

Lab Sample ID: LCS 140-42561/2-B

Matrix: Air

Prep Type: Total/NA **Analysis Batch: 42824** Prep Batch: 42561

Spike LCS LCS %Rec. Analyte Added Result Qualifier %Rec Limits Unit

HFPO-DA 0.0200 0.01768 88 60 - 140 ug/Sample

LCS LCS

Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 87

Lab Sample ID: LCSD 140-42561/3-B Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Matrix: Air

Analysis Batch: 42824

Prep Batch: 42561 LCSD LCSD Spike %Rec. RPD Analyte Added Result Qualifier Unit %Rec Limits RPD Limit

HFPO-DA 0.0200 0.01792 90 60 - 140 ug/Sample

LCSD LCSD

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

Lab Sample ID: MB 140-42566/1-B **Client Sample ID: Method Blank**

Matrix: Air Prep Type: Total/NA **Analysis Batch: 42934** Prep Batch: 42566

MB MB

Result Qualifier RL MDL Unit Analyte Prepared Analyzed Dil Fac 09/09/20 15:00 09/19/20 12:18 HFPO-DA ND 0.00160 0.00140 ug/Sample

MB MB Dil Fac

Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed 13C3 HFPO-DA 68 25 - 150 09/09/20 15:00 09/19/20 12:18

9/21/2020

Client Sample ID: Lab Control Sample

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

Job ID: 140-20289-1

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

Lab Sample ID: LCS 140-42566/2-B	Client Sample ID: Lab Control Sample
Matrix: Air	Prep Type: Total/NA
Analysis Batch: 42934	Prep Batch: 42566

Spike LCS LCS %Rec. Result Qualifier Added %Rec Limits Analyte Unit HFPO-DA 60 - 140 0.0200 0.02000 ug/Sample 100

LCS LCS Isotope Dilution %Recovery Qualifier

Limits 13C3 HFPO-DA 25 - 150 76

Lab Sample ID: LCSD 140-42566/3-B **Client Sample ID: Lab Control Sample Dup** Prep Type: Total/NA

Matrix: Air

Analysis Batch: 42934 Prep Batch: 42566 Spike LCSD LCSD %Rec. **RPD**

Analyte Added Result Qualifier Unit %Rec Limits RPD Limit HFPO-DA 0.0200 0.02047 ug/Sample 102 60 - 140

LCSD LCSD

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

Lab Sample ID: MB 140-42711/14-B Client Sample ID: Method Blank Prep Type: Total/NA

Matrix: Air

Analysis Batch: 42757 Prep Batch: 42711

MB MB

Analyte Result Qualifier **MDL** Unit **Prepared** Analyzed Dil Fac RI HFPO-DA 0.000500 0.0000825 ug/Sample 09/14/20 11:33 09/15/20 11:56 0.0001444 J MB MB

%Recovery Qualifier Isotope Dilution Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 25 - 150 <u>09/14/20 11:33</u> <u>09/15/20 11:56</u> 95

Lab Sample ID: MB 140-42711/1-B Client Sample ID: Method Blank

Prep Type: Total/NA **Matrix: Air** Prep Batch: 42711 **Analysis Batch: 42757**

MB MB Analyte

Result Qualifier **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA ND 0.000500 0.0000825 ug/Sample 09/14/20 11:33 09/15/20 11:47 MB MB

Isotope Dilution Qualifier Dil Fac %Recovery Limits Prepared Analyzed 13C3 HFPO-DA 25 - 150 09/14/20 11:33 09/15/20 11:47 99

Lab Sample ID: LCS 140-42711/2-B

Matrix: Air Prep Type: Total/NA **Analysis Batch: 42757** Prep Batch: 42711

Spike LCS LCS %Rec. Added Result Qualifier Limits Analyte Unit %Rec

HFPO-DA 0.0100 0.009984 ug/Sample 100 60 - 140

LCS LCS Isotope Dilution %Recovery Qualifier Limits

13C3 HFPO-DA 97 25 - 150 **Client Sample ID: Lab Control Sample**

QC Sample Results

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

Job ID: 140-20289-1

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

Lab Sample ID: LCSD 140-42711/3-B			Client Sample ID: Lab Control Sample Dup
Matrix: Air			Prep Type: Total/NA
Analysis Batch: 42757			Prep Batch: 42711
	Spike	LCSD LCSD	%Rec. RPD

		Spike	LCSD	LCSD				%Rec.		RPD
Analyte		Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HFPO-DA		0.0100	0.009072		ug/Sample	_	91	60 - 140	10	30
	LCSD LCSD									

Isotope Dilution%RecoveryQualifierLimits13C3 HFPO-DA10325 - 150

QC Association Summary

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

Job ID: 140-20289-1

LCMS

Prep Batch: 42561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Total/NA	Air	None	
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Total/NA	Air	None	
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Total/NA	Air	None	
MB 140-42561/14-B	Method Blank	Total/NA	Air	None	
MB 140-42561/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 42566

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-2	QF-2345,2346,2348 VES BC OUTLET R1 M0010	Total/NA	Air	None	
140-20289-4	QF-2349 VES BC OUTLET R1 M0010 BREAKTH	Total/NA	Air	None	
140-20289-6	QF-2352,2353,2355 VES BC OUTLET R2 M001(Total/NA	Air	None	
140-20289-8	QF-2356 VES BC OUTLET R2 M0010 BREAKTH	Total/NA	Air	None	
140-20289-10	QF-2359,2360,2362 VES BC OUTLET R3 M001(Total/NA	Air	None	
140-20289-12	QF-2363 VES BC OUTLET R3 M0010 BREAKTH	Total/NA	Air	None	
MB 140-42566/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42566/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42566/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Total/NA	Air	Split	42561
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Total/NA	Air	Split	42561
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Total/NA	Air	Split	42561
MB 140-42561/14-B	Method Blank	Total/NA	Air	Split	42561
MB 140-42561/1-B	Method Blank	Total/NA	Air	Split	42561
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	Split	42561
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42561

Cleanup Batch: 42680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-2	QF-2345,2346,2348 VES BC OUTLET R1 M0010	Total/NA	Air	Split	42566
140-20289-4	QF-2349 VES BC OUTLET R1 M0010 BREAKTH	Total/NA	Air	Split	42566
140-20289-6	QF-2352,2353,2355 VES BC OUTLET R2 M0010	Total/NA	Air	Split	42566
140-20289-8	QF-2356 VES BC OUTLET R2 M0010 BREAKTH	Total/NA	Air	Split	42566
140-20289-10	QF-2359,2360,2362 VES BC OUTLET R3 M0010	Total/NA	Air	Split	42566
140-20289-12	QF-2363 VES BC OUTLET R3 M0010 BREAKTH	Total/NA	Air	Split	42566
MB 140-42566/1-B	Method Blank	Total/NA	Air	Split	42566
LCS 140-42566/2-B	Lab Control Sample	Total/NA	Air	Split	42566
LCSD 140-42566/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42566

Prep Batch: 42711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batcl
140-20289-3	QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3	Total/NA	Air	None	
140-20289-7	QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3	Total/NA	Air	None	
140-20289-11	QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3	Total/NA	Air	None	
MB 140-42711/14-B	Method Blank	Total/NA	Air	None	
MB 140-42711/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	None	

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QC Association Summary

Client: The Chemours Company FC, LLC Project/Site: VES CB Outlet - M0010 Job ID: 140-20289-1

LCMS

Cleanup Batch: 42725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-3	QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3	Total/NA	Air	Split	42711
140-20289-7	QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3	Total/NA	Air	Split	42711
140-20289-11	QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3	Total/NA	Air	Split	42711
MB 140-42711/14-B	Method Blank	Total/NA	Air	Split	42711
MB 140-42711/1-B	Method Blank	Total/NA	Air	Split	42711
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	Split	42711
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42711

Analysis Batch: 42757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-3	QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	42725
140-20289-7	QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	42725
140-20289-11	QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	42725
MB 140-42711/14-B	Method Blank	Total/NA	Air	537 (modified)	42725
MB 140-42711/1-B	Method Blank	Total/NA	Air	537 (modified)	42725
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42725
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42725

Cleanup Batch: 42822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Total/NA	Air	Dilution	42591
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Total/NA	Air	Dilution	42591
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Total/NA	Air	Dilution	42591

Analysis Batch: 42824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Total/NA	Air	537 (modified)	42822
MB 140-42561/14-B	Method Blank	Total/NA	Air	537 (modified)	42591
MB 140-42561/1-B	Method Blank	Total/NA	Air	537 (modified)	42591
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42591
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42591

Analysis Batch: 42934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-2	QF-2345,2346,2348 VES BC OUTLET R1 M0010	Total/NA	Air	537 (modified)	42680
140-20289-4	QF-2349 VES BC OUTLET R1 M0010 BREAKTH	Total/NA	Air	537 (modified)	42680
140-20289-6	QF-2352,2353,2355 VES BC OUTLET R2 M0010	Total/NA	Air	537 (modified)	42680
140-20289-8	QF-2356 VES BC OUTLET R2 M0010 BREAKTH	Total/NA	Air	537 (modified)	42680
140-20289-10	QF-2359,2360,2362 VES BC OUTLET R3 M001(Total/NA	Air	537 (modified)	42680
140-20289-12	QF-2363 VES BC OUTLET R3 M0010 BREAKTH	Total/NA	Air	537 (modified)	42680
MB 140-42566/1-B	Method Blank	Total/NA	Air	537 (modified)	42680
LCS 140-42566/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42680
LCSD 140-42566/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42680

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Job ID: 140-20289-1

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

Client Sample ID: QF-2343,2344 VES BC OUTLET R1 M0010

Lab Sample ID: 140-20289-1

FH

Date Collected: 09/01/20 00:00 **Matrix: Air**

Date Received: 09/04/20 12:35

	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	111 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			56 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:23	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: QF-2345,2346,2348 VES BC OUTLET R1

Lab Sample ID: 140-20289-2

M0010 BH

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		5			42934	09/19/20 12:44	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: QF-2347 VES BC OUTLET R1 M0010 IMP Lab Sample ID: 140-20289-3

1,2&3 CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00855	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
					Sample					
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 13:59	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Lab Sample ID: 140-20289-4 Client Sample ID: QF-2349 VES BC OUTLET R1 M0010

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42934	09/19/20 12:53	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Job ID: 140-20289-1

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

Client Sample ID: QF-2350,2351 VES BC OUTLET R2 M0010

Lab Sample ID: 140-20289-5

FH

Date Collected: 09/01/20 00:00 **Matrix: Air**

Date Received: 09/04/20 12:35

	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	130 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			65 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:32	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: QF-2352,2353,2355 VES BC OUTLET R2

Lab Sample ID: 140-20289-6

M0010 BH

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		20			42934	09/19/20 13:02	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: QF-2354 VES BC OUTLET R2 M0010 IMP Lab Sample ID: 140-20289-7

1,2&3 CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

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

Client Sample ID: QF-2356 VES BC OUTLET R2 M0010 Lab Sample ID: 140-20289-8

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42934	09/19/20 13:11	JRC	TAL KNX
	Instrumer	nt ID: LCA								

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Client: The Chemours Company FC, LLC Job ID: 140-20289-1

Project/Site: VES CB Outlet - M0010

Client Sample ID: QF-2357,2358 VES BC OUTLET R3 M0010

Lab Sample ID: 140-20289-9

FΗ

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	88 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			44 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:41	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: QF-2359,2360,2362 VES BC OUTLET R3 Lab Sample ID: 140-20289-10

M0010 BH

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

Prep Type Total/NA Total/NA	Batch Type Prep Cleanup	Batch Method None Split	Run	Dil Factor	Initial Amount 1 Sample 180 mL	Final Amount 360 mL 10 mL	Number 42566 42680	Prepared or Analyzed 09/09/20 15:00 09/13/20 05:56		Lab TAL KNX TAL KNX
Total/NA	Analysis Instrumer	537 (modified) nt ID: LCA		10			42934	09/19/20 13:20	JRC	TAL KNX

Client Sample ID: QF-2361 VES BC OUTLET R3 M0010 IMP Lab Sample ID: 140-20289-11

1,2&3 CONDENSATE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Prep	None			0.00877	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
				Sample					
Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Analysis	537 (modified)		1			42757	09/15/20 14:17	JRC	TAL KNX
_	Type Prep Cleanup	Type Method Prep None Cleanup Split	Type Method Run Prep None Cleanup Split	Type Method Run Factor Prep None Cleanup Split	Type Method Run Factor Amount Prep None 0.00877 Sample Cleanup Split 10 mL	Type Method Run Factor Amount Amount Prep None 0.00877 10 mL Cleanup Split 10 mL 10 mL	Type Method Run Factor Amount Amount Number Prep None 0.00877 10 mL 42711 Sample Split 10 mL 10 mL 42725	Type Method Run Factor Amount Amount Number or Analyzed Prep None 0.00877 10 mL 42711 09/14/20 11:33 Sample Split 10 mL 10 mL 42725 09/14/20 14:08	Type Method Run Factor Amount Amount Number 42711 or Analyzed 09/14/20 11:33 Analyst DWS Prep None 0.00877 10 mL 42711 09/14/20 11:33 DWS Cleanup Split 10 mL 10 mL 42725 09/14/20 14:08 DWS

Client Sample ID: QF-2363 VES BC OUTLET R3 M0010 Lab Sample ID: 140-20289-12

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

	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	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		5			42934	09/19/20 13:29	JRC	TAL KNX
	Instrumer	nt ID: LCA								

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Job ID: 140-20289-1

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

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42561/14-B Date Collected: N/A Matrix: Air

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

Client Sample ID: Method Blank Lab Sample ID: MB 140-42561/1-B

Date Collected: N/A Matrix: Air

Date Received: N/A

Date Received: N/A

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

Client Sample ID: Method Blank Lab Sample ID: MB 140-42566/1-B

Date Collected: N/A Matrix: Air

Date Received: N/A

Batch Batch Dil Initial Final Batch Prepared Method Amount Number **Prep Type** Type Run **Factor Amount** or Analyzed Analyst Lab Total/NA Prep None 1 Sample 360 mL 42566 09/09/20 15:00 DWS TAL KNX Total/NA 180 mL Cleanup Split 10 mL 42680 09/13/20 05:56 DWS TAL KNX Total/NA Analysis 537 (modified) 1 42934 09/19/20 12:18 JRC TAL KNX Instrument ID: LCA

Client Sample ID: Method Blank Lab Sample ID: MB 140-42711/14-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	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:56	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: Method Blank Lab Sample ID: MB 140-42711/1-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	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:47	JRC	TAL KNX
IUIai/INA	- ,	nt ID: LCA		ı			42131	09/15/20 11.47	JKC	'

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Matrix: Air

Matrix: Air

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

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42561/2-B

Matrix: Air

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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:29	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: Lab Control Sample Lab Sample ID: LCS 140-42566/2-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	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42934	09/19/20 12:27	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: Lab Control Sample Lab Sample ID: LCS 140-42711/2-B

Date Collected: N/A Matrix: Air

Date Received: N/A

Batch Batch Dil Initial Final Batch Prepared **Prep Type** Method Amount Number Type Run **Factor** Amount or Analyzed Analyst Lab Total/NA Prep None 1 Sample 10 mL 42711 09/14/20 11:33 DWS TAL KNX Total/NA Split 10 mL 10 mL Cleanup 42725 09/14/20 14:08 DWS TAL KNX Total/NA Analysis 537 (modified) 1 42757 09/15/20 12:05 JRC TAL KNX Instrument ID: LCA

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-42561/3-B

Date Collected: N/A

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	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:38	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-42566/3-B

Date Collected: N/A Matrix: Air

Date Received: N/A

Method	Run	Factor						
		racioi	Amount	Amount	Number	or Analyzed	Analyst	Lab
None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
up Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
sis 537 (modified)		1			42934	09/19/20 12:36	JRC	TAL KNX
/5	nup Split	nup Split vsis 537 (modified)	nup Split vsis 537 (modified) 1	nup Split 180 mL vsis 537 (modified) 1	nup Split 180 mL 10 mL vsis 537 (modified) 1	rup Split 180 mL 10 mL 42680 vsis 537 (modified) 1 42934	nup Split 180 mL 10 mL 42680 09/13/20 05:56 vsis 537 (modified) 1 42934 09/19/20 12:36	rup Split 180 mL 10 mL 42680 09/13/20 05:56 DWS rsis 537 (modified) 1 42934 09/19/20 12:36 JRC

Eurofins TestAmerica, Knoxville

Matrix: Air

Lab Chronicle

Client: The Chemours Company FC, LLC Job ID: 140-20289-1

Project/Site: VES CB Outlet - M0010

Client Sample ID: Lab Control Sample Dup

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

Date Collected: N/A

Matrix: Air

Date Received: N/A

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

Laboratory References:

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

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Accreditation/Certification Summary

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

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-21
Colorado	State	TN00009	02-28-21
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	07-01-21
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	LA110001	12-31-12 *
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-21
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-21
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

Job ID: 140-20289-1

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

Method Summary

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

Job ID: 140-20289-1

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: VES CB Outlet - M0010

Job ID: 140-20289-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-2	QF-2345,2346,2348 VES BC OUTLET R1 M001(BH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-3	QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-4	QF-2349 VES BC OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-6	QF-2352,2353,2355 VES BC OUTLET R2 M001(BH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-7	QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
40-20289-8	QF-2356 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	
40-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-10	QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-11	QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-12	QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	

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



Environment Testing TestAmerica

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

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

la de la completa con a Provincia de la Completa del Completa de la Completa de la Completa del Completa de la Completa del Completa de la Completa de la Completa del Completa de la Comp	
<u>Laboratory Deliverable Turn</u>	<u>laround Requirements:</u>
Analytical Due Date:	21 Days from Lab Receipt
•	_ : _ s.y s .: s
(INEVIEW-INEIGASED Data)	
Data Package Due Date:	28 Days from Lab Receipt
	,
Laboratory Destination:	Eurofins TestAmerica
	5815 Middlebrook Pike
	
<u> Lab Phone Number:</u>	865.291.3000
Courier:	Hand Deliver
Laboratory Destination: Lab Phone Number:	5815 Middlebrook Pike Knoxville, TN 37921 865.291.3000

Project Deliverables:

Report analytical results on TALS Reports and in data packages. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
HEPO-DA (CAS No. 13252-13-6)	14 Days to Extraction: 40 Days to Analysis	A Compression of the second of the second



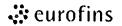
Project Field Sample Sample QC Sample No./Sample Run Collection Require Bottle/ 15 Coding ID Date No. -ments Container Sample Type/Analysis Analytical Specifications **QF-2343 VES CB** 1 125 mL Particulate Filter (90 mm Knoxville: Spike sample with the Outlet R1 M0010 HDPE Wide-Whatman Glass Isotope Dilution Internal Standard Filter Mouth Bottle Microfiber) (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Method 0010 Train Filter sample. HFPO-DA Analysis Knoxville: Analyze for HFPO-DA. QF-2344 VES CB 125 mL Front Half of Filter Holder Knoxville: Use this solvent sample in Outlet R1 M0010 the Particulate Filter extraction. HDPE Wide-& Probe Methanol/5% FH of Filter Holder Mouth Bottle Ammonium Hydroxide & Probe MeOH Rinse Rinse Method 0010 Train HFPO-DA Analysis QF-2345 VES CB XAD-2 Resin XAD-2 Resin Tube Knoxville: Spike sample with the Outlet R1 M0010 Tube Isotope Dilution Internal Standard XAD-2 Resin Tube (IDIS) at the regular level. Use the Method 0010 Train Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to HFPO-DA Analysis assist the solvent extraction of the XAD-2 resin sample. Knoxville: Analyze for HFPO-DA.

TestAmerica

Environment Testing

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications	
QF-2346 VES CB Outlet R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	1			125 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.	6
		9/1/20) : :		Method 0010 Train HFPO-DA Analysis	Knoxville: Analyze for HFPO-DA.	8
QF-2347 VES CB Outlet R1 M0010 Impingers 1,2 & 3 Condensate	1	. \		500 mL HDPE Wide- Mouth Bottle	Impinger #1, #2 & #3 Condensate	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis.	9
Condensate		911/20			Method 0010 Train HFPO-DA Analysis	Knoxville: Analyze for HFPO-DA.	
QF-2348 VES CB Outlet R1 M0010 Impinger Glassware MeOH	1	9/1/20		250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.	11
Rinse		• •			Method 0010 Train HFPO-DA Analysis		1
QF-2349 VES CB Outlet R1 M0010 Breakthrough XAD-2 Resin Tube	1	9/1/20		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction.	
		.,,,,			Method 0010 Train HFPO-DA Analysis	Knoxville: Analyze for HFPO-DA.	
QF-2350 VES CB Outlet R2 M0010 Filter	2	4/1/20		125 mL HDPE Wide- Mouth Bottle	Particulate Filter (90 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	
					Method 0010 Train HFPO-DA Analysis	solvent extraction of the Particulate Filter sample. Knoxville: Analyze for HFPO-DA.	
QF-2351 VES CB Outlet R2 M0010 FH of Filter Holder & Probe MeOH Rinse	2	9(1/20		125 mL HDPE Wide- Mouth Bottle	Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse	Knoxville: Use this solvent sample in the Particulate Filter extraction.	
					Method 0010 Train HFPO-DA Analysis		

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



Environment Testing TestAmerica

Field Sample No./Sample Coding ID	Run	Sample Collection Date	Project QC Require	Sample Bottle/		
QF-2352 VES CB Outlet R2 M0010 XAD-2 Resin Tube	No. 2	9(1(20	ments	Container XAD-2 Resin Tube	Sample Type/Analysis XAD-2 Resin Tube Method 0010 Train HFPO-DA Analysis	Analytical Specifications Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. Knoxville: Analyze for HFPO-DA.
QF-2353 VES CB Outlet R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	2	9/1/20		125 mL HDPE Wide- Mouth Bottle	Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. Knoxville: Analyze for HFPO-DA.
QF-2354 VES CB Outlet R2 M0010 Impingers 1,2 & 3 Condensate	2	9/1/20		500 mL HDPE Wide- Mouth Bottle	Impinger #1, #2 & #3 Condensate Method 0010 Train HFPO-DA Analysis	Knoxville: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. Knoxville: Analyze for HFPO-DA.
QF-2355 VES CB Outlet R2 M0010 Impinger Glassware MeOH Rinse	2	9/1/20		250 mL HDPE Wide- Mouth Bottle	Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse Method 0010 Train HFPO-DA Analysis	Knoxville: Use this solvent sample in the XAD-2 Resin Extraction.
QF-2356 VES CB Outlet R2 M0010 Breakthrough XAD-2 Resin Tube	2	9/1/20		XAD-2 Resin Tube	Breakthrough XAD-2 Resin Tube Method 0010 Train HFPO-DA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. Knoxville: Analyze for HFPO-DA.
QF-2357 VES CB Outlet R3 M0010 Filter	3	ochhe		125 mL HDPE Wide- Mouth Bottle	Particulate Filter (90 mm Whatman Glass Microfiber) Method 0010 Train HFPO-DA Analysis	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. Knoxville: Analyze for HFPO-DA.

Environment Testing TestAmerica

Project Field Sample Sample QC Sample No./Sample Collection Require Bottle/ Run Coding ID Date -ments Container Sample Type/Analysis No. Analytical Specifications QF-2358 VES CB 3 125 mL Front Half of Filter Holder Knoxville: Use this solvent sample in Outlet R3 M0010 HDPE Wide-& Probe Methanol/5% the Particulate Filter extraction. FH of Filter Holder Mouth Bottle **Ammonium Hydroxide** & Probe MeOH Rinse Rinse Method 0010 Train HFPO-DA Analysis 3 QF-2359 VES CB XAD-2 Resin XAD-2 Resin Tube Knoxville: Spike sample with the Outlet R3 M0010 Tube Isotope Dilution Internal Standard XAD-2 Resin Tube (IDIS) at the regular level. Use the Method 0010 Train Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to HFPO-DA Analysis assist the solvent extraction of the XAD-2 resin sample. Knoxville: Analyze for HFPO-DA. QF-2360 VES CB 3 125 mL **Back Half of Filter Holder** Knoxville: Use this solvent sample Outlet R3 M0010 HDPE Wide-& Coil Condenser and the Impinger Glassware Methanol BH of Filter Holder Mouth Bottle Methanol/5% Ammonium Rinse in the XAD-2 Resin extraction. & Coil Condenser Hydroxide Rinse MeOH Rinse Knoxville: Analyze for HFPO-DA. Method 0010 Train HFPO-DA Analysis QF-2361 VES CB 3 500 mL Impinger #1, #2 & #3 Knoxville: Measure the volume of the Outlet R3 M0010 HDPE Wide-Condensate Impinger Composite and forward a 250 9/1/20 Impingers 1,2 & 3 Mouth Bottle mL portion to Knoxville for analysis. Condensate Method 0010 Train Knoxville: Analyze for HFPO-DA. HFPO-DA Analysis Knoxville: Use this solvent sample in QF-2362 VES CB 3 250 mL Impinger Glassware Outlet R3 M0010 HDPE Wide-Methanol/5% Ammonium the XAD-2 Resin Extraction. Impinger 9/1/20 Mouth Bottle **Hydroxide Rinse** Glassware MeOH Rinse Method 0010 Train HFPO-DA Analysis QF-2363 VES CB 3 XAD-2 Resin **Breakthrough XAD-2** Knoxville: Spike sample with the Outlet R3 M0010 Tube Resin Tube Isotope Dilution Internal Standard 9/1/20 Breakthrough (IDIS) at the regular level and perform XAD-2 Resin Tube the regular XAD-2 Resin Extraction. Method 0010 Train Knoxville: Analyze for HFPO-DA. HFPO-DA Analysis



Environment Testing TestAmerica

Sample Receipt Log and Condition of the Samples Upon Receipt:

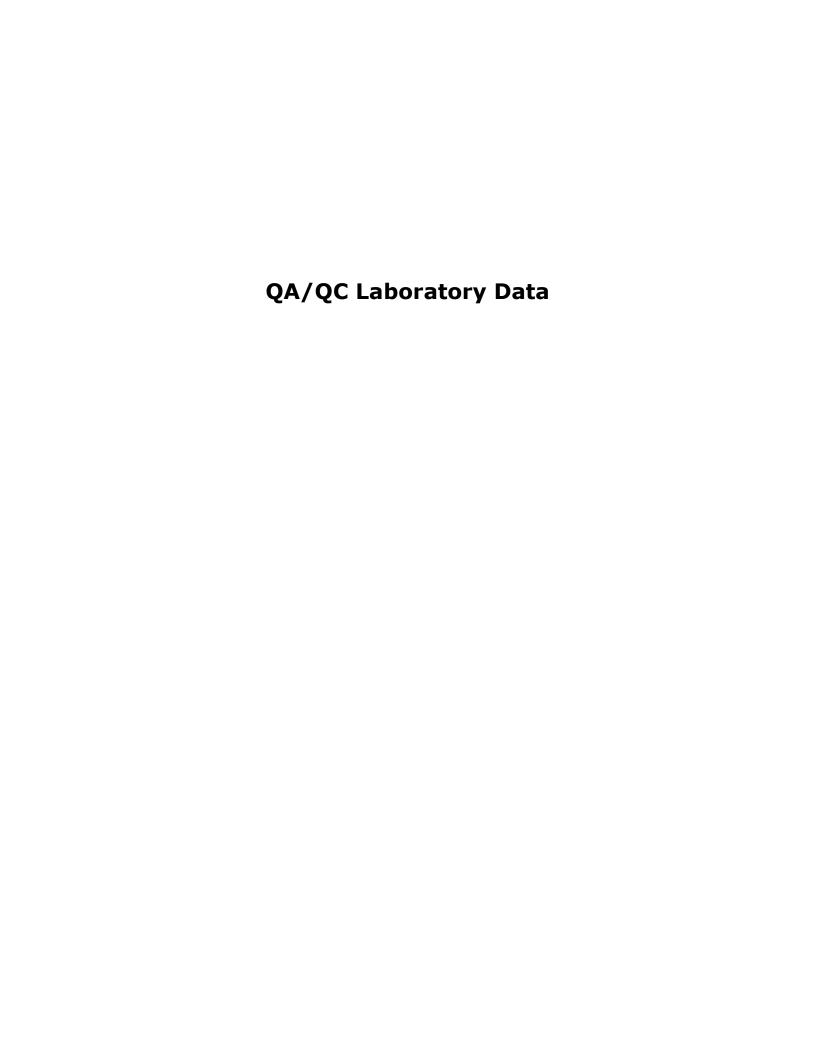
Please fill in the following information:	Comments
_	(Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	AW NF2
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 0.8/07 0.8°C
(3) Record any apparent sample loss/breakage.	MONS
(4) Record any unidentified samples transported with this shipment of samples:	-MINE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	WANT NOW KOEN WE WISTON CHAIC
project a required apacimoations (i.e. no noncomormances).	Milian Our INEITED WIN INDING! ZON'

Custody Tran	nsfer:		·
•			,
Relinquished By:	Name Name	RAmbell Company	9/3/20 2030 Date/Time
Accepted By:	Dan Ed St	ETA KNOX	9/3/30 2030
Relinquished By:	Dory Calul	Company ETA KNOX	Date/Time 7/4/20 1235
	Name	Company	Date/Time
Accepted By:	Rughlana	ETA KW X	9-4-20 12:35
	Name	Company	Date/Time
Relinquished By:			
	Name	Company	Date/Time
Accepted By:			
	Name	Company Company	Date/Time
Relinquished By:			
	Name	Company	Date/Time
Accepted By:			
	Name	Company	Date/Time

Review Items	Yes	2	\$	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 intact?				O Yes O NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C. VOST: 10 °C)				☐ Cooler Out of Temp, Client	
Thermometer ID: Scex Correction factor: 0-0				Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?				☐ Containers, Broken	
6. Were samples received in appropriate containers?				☐ Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC?				☐ 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 on COC, Not Received	
9. Is the date/time of sample collection noted?	\			COC; No Date/Time; Client	
10 Was the sampler identified on the COC?	•		\downarrow	Contacted	Labeling Verified by: Date:
11 Is the client and nmiect name/# identified?	X			COC Incorrect/Incomplete	all took of an lot an and an
12. Are tests/parameters listed for each sample?	1			COC No tests on COC	pri test strip for number:
13. Is the matrix of the samples noted?	/			☐ 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	
16. Were samples received with correct chemical preservative (excluding Encore)?				☐ pH Adjusted, pH Included (See box 164)	Lot Number: Exp Date:
	J		\	□ Incorrect Preservative	Analyst:
17. Were VOA samples received without headspace?				☐ Headspace (VOA only)	Date:
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			1	☐ Residual Chlorine	l me:
19. For 1613B water samples is pH<9?				☐ If no, notify lab to adjust	
l samples was sample acti				☐ Project missing info	
Project #: (4004321 PM Instructions:					
Sample Receiving Associate:			Date:	Date: 9-7-20	QA026R32.doc, 062719
			•		

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: 140-20292-1

Client Project/Site: August Field QC Samples - M0010

For:

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

Attn: Michael Aucoin

Authorized for release by:

9/21/2020 3:01:54 PM

Courtney Adkins, Project Manager II (865)291-3019

courtney.adkins@eurofinset.com

LINKS

Review your project results through

Total Access

Have a Question?



Visit us at:

www.eurofinsus.com/Env

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

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

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

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Isotope Dilution Summary	9
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QC Association Summary	13
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Sample Summary	22
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Definitions/Glossary

Client: The Chemours Company FC, LLC Job ID: 140-20292-1

Project/Site: August Field QC Samples - M0010

Qualifiers

1 4	N/A	C
ш	V	J

Qualifier	Qualifier	Desci	ıptıo	n		

В Compound was found in the blank and sample.

Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
	Listed under the "D" column to designed that the result is reported an a dry usight he

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**

Detection Limit (DoD/DOE) DΙ

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

Decision Level Concentration (Radiochemistry) DLC

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 MLMinimum Level (Dioxin) Most Probable Number MPN 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**

Relative Error Ratio (Radiochemistry) RER

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

TNTC Too Numerous To Count

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9/21/2020

Case Narrative

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

Job ID: 140-20292-1

Job ID: 140-20292-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative 140-20292-1

Sample Receipt

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

LCMS

Method 537 (modified): The required dilution factor for the following samples were higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): GF-2564,2565 QC VEN CB M0010 FH BT (140-20292-1). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: GF-2564,2565 QC VEN CB M0010 FH BT (140-20292-1). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples GF-2566,2567,2569 QC VEN CB M0010 BH BT (140-20292-2) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: GF-2566,2567,2569 QC VEN CB M0010 BH BT (140-20292-2). The sample was analyzed at a dilution based on screening results.

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

Organic Prep

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

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Client: The Chemours Company FC, LLC

Job ID: 140-20292-1 Project/Site: August Field QC Samples - M0010

Client Sample ID: GF-2564,2565 QC VEN CB M0010 FH BT Lab Sample ID: 140-20292-1

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

Client Sample ID: GF-2566,2567,2569 QC VEN CB M0010 BH Lab Sample ID: 140-20292-2 BT

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

Client Sample ID: GF-2568 QC VEN CB M0010 IMP 1,2&3 Lab Sample ID: 140-20292-3

CONDENSATE BT

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

Client Sample ID: GF-2570 QC VEN CB M0010 Lab Sample ID: 140-20292-4 BREAKTHROUGH XAD-2 RESIN TUBE BT

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

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB Lab Sample ID: 140-20292-5

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

Lab Sample ID: 140-20292-6 Client Sample ID: GF-2572 QC VEN CB M0010 MEOH WITH

5%/NH4OH RB

No Detections.

Client Sample ID: GF-2573 QC VEN CB M0010 COMBINED

GLASSWARE RINSES (MEOH/5% NH4OH) PB

No Detections.

Client Sample ID: A-7162, MEDIA CHECK XAD Lab Sample ID: 140-20292-8

No Detections.

Client Sample ID: A-7163, MEDIA CHECK FILTER Lab Sample ID: 140-20292-9

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

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Lab Sample ID: 140-20292-7

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

95

Lab Sample ID: 140-20292-1 Date Collected: 09/01/20 00:00

Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Result Qualifier Analyte RL **MDL** Unit Prepared Analyzed Dil Fac 0.100 09/09/20 11:52 09/16/20 19:00 HFPO-DA 0.0580 ug/Sample 0.804 Isotope Dilution %Recovery Qualifier I imits Prepared Analyzed Dil Fac 13C3 HFPO-DA 09/09/20 11:52 09/16/20 19:00 25 - 150

Client Sample ID: GF-2566,2567,2569 QC VEN CB M0010 BH Lab Sample ID: 140-20292-2

BT

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac **HFPO-DA** 1.31 0.0800 0.0700 ug/Sample 09/09/20 15:03 09/18/20 17:01 50 Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 09/09/20 15:03 09/18/20 17:01 94 25 - 150 50

Client Sample ID: GF-2568 QC VEN CB M0010 IMP 1,2&3 Lab Sample ID: 140-20292-3

CONDENSATE BT

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA 0.00911 B 0.000500 0.0000825 ug/Sample 09/14/20 11:33 09/15/20 16:13 Isotope Dilution %Recovery Qualifier Dil Fac Limits Prepared Analyzed 13C3 HFPO-DA 25 - 150 09/14/20 11:33 09/15/20 16:13 107

Client Sample ID: GF-2570 QC VEN CB M0010 Lab Sample ID: 140-20292-4

BREAKTHROUGH XAD-2 RESIN TUBE BT

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

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

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB Lab Sample ID: 140-20292-5

Date Collected: 09/01/20 00:00 Date Received: 09/04/20 12:35

Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

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

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Matrix: Air

9/21/2020

Project/Site: August Field QC Samples - M0010

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

Date Collected: 09/01/20 00:00

Date Received: 09/04/20 12:35

Sample Container: Air Train

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

Client Sample ID: GF-2572 QC VEN CB M0010 MEOH WITH

5%/NH4OH RB

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac HFPO-DA ND 0.00160 0.00140 ug/Sample 09/09/20 15:03 09/18/20 17:38 Isotope Dilution %Recovery Qualifier Dil Fac Limits Prepared Analyzed 13C3 HFPO-DA 09/09/20 15:03 09/18/20 17:38 89 25 _ 150

Client Sample ID: GF-2573 QC VEN CB M0010 COMBINED

GLASSWARE RINSES (MEOH/5% NH4OH) PB

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances Result Qualifier RL Analyte MDL Unit D Prepared Analyzed Dil Fac HFPO-DA ND 0.00160 0.00140 ug/Sample 09/09/20 15:03 09/18/20 17:47 Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C3 HFPO-DA 82 25 - 150 09/09/20 15:03 09/18/20 17:47

Client Sample ID: A-7162, MEDIA CHECK XAD

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

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

Client Sample ID: A-7163, MEDIA CHECK FILTER

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

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

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9/21/2020

Job ID: 140-20292-1

Matrix: Air

Lab Sample ID: 140-20292-5

Lab Sample ID: 140-20292-6

Lab Sample ID: 140-20292-7

Lab Sample ID: 140-20292-8

Lab Sample ID: 140-20292-9

Default Detection Limits

Client: The Chemours Company FC, LLC

Job ID: 140-20292-1

Project/Site: August Field QC Samples - M0010

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 Job ID: 140-20292-1 Project/Site: August Field QC Samples - M0010

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)	
140-20292-1	GF-2564,2565 QC VEN CB M00	95	
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	94	
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT	107	
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESI TUBE BT	44	
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	97	
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB	89	
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PI	82	
140-20292-8	A-7162, MEDIA CHECK XAD	83	
140-20292-9	A-7163, MEDIA CHECK FILTER	86	
LCS 140-42561/2-B	Lab Control Sample	87	
LCS 140-42567/2-B	Lab Control Sample	49	
LCS 140-42711/2-B	Lab Control Sample	97	
LCSD 140-42561/3-B	Lab Control Sample Dup	83	
LCSD 140-42567/3-B	Lab Control Sample Dup	51	
LCSD 140-42711/3-B	Lab Control Sample Dup	103	
MB 140-42561/14-B	Method Blank	88	
MB 140-42561/1-B	Method Blank	85	
MB 140-42567/1-B	Method Blank	38	
MB 140-42711/14-B	Method Blank	95	
MB 140-42711/1-B	Method Blank	99	

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Client: The Chemours Company FC, LLC Job ID: 140-20292-1

RL

RL

0.00100

Limits

Spike

Added

0.0200

Limits

25 - 150

Spike

Added

0.0200

Limits

25 - 150

25 - 150

0.00100

Limits

25 - 150

MDL Unit

MDL Unit

0.000580 ug/Sample

Project/Site: August Field QC Samples - M0010

Method: 537 (modified) - Fluorinated Alkyl Substances

88

MB MB

MB MB

 $\overline{\mathsf{ND}}$

85

%Recovery

LCS LCS

LCSD LCSD

MB MB Result Qualifier

%Recovery Qualifier

83

%Recovery Qualifier

87

Qualifier

Qualifier

Lab Sample ID: MB 140-42561/14-B **Matrix: Air**

Analysis Batch: 42824

MB MB

Result Qualifier Analyte HFPO-DA ND

MB MB Isotope Dilution %Recovery Qualifier

Lab Sample ID: MB 140-42561/1-B **Matrix: Air**

Analysis Batch: 42824

Analyte Result

HFPO-DA

Isotope Dilution 13C3 HFPO-DA

13C3 HFPO-DA

Lab Sample ID: LCS 140-42561/2-B

Matrix: Air

Analysis Batch: 42824

Analyte HFPO-DA

Isotope Dilution

13C3 HFPO-DA

Lab Sample ID: LCSD 140-42561/3-B

Matrix: Air Analysis Batch: 42824

Analyte

Isotope Dilution

HFPO-DA

Analyte

13C3 HFPO-DA

Lab Sample ID: MB 140-42567/1-B **Matrix: Air**

Analysis Batch: 42907

HFPO-DA ND MB MB Isotope Dilution %Recovery

13C3 HFPO-DA

38

Qualifier Limits

25 - 150

0.00160

RL

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

Prep Batch: 42561

Analyzed Dil Fac Prepared 09/09/20 11:52 09/16/20 15:20

Prepared Analyzed Dil Fac 09/09/20 11:52 09/16/20 15:20

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 42561

Prepared Analyzed Dil Fac

09/09/20 11:52 09/16/20 15:11 0.000580 ug/Sample

Prepared Analyzed Dil Fac 09/09/20 11:52 09/16/20 15:11

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 42561

%Rec. %Rec

Limits 88 60 - 140

Unit

ug/Sample

Client Sample ID: Lab Control Sample Dup

LCSD LCSD

Result Qualifier

LCS LCS

0.01768

Result Qualifier

0.01792

MDL Unit

0.00140 ug/Sample

Unit ug/Sample

%Rec

90

Limits RPD 60 - 140

%Rec.

Prep Type: Total/NA

Prep Batch: 42561

RPD

Limit

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

Prep Batch: 42567

Prepared Analyzed Dil Fac 09/09/20 15:03 09/18/20 16:35

Prepared Analyzed Dil Fac

09/09/20 15:03 09/18/20 16:35

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Client: The Chemours Company FC, LLC Job ID: 140-20292-1

Project/Site: August Field QC Samples - M0010

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

Client Sample ID: Lab Control Sample Lab Sample ID: LCS 140-42567/2-B **Matrix: Air** Prep Type: Total/NA **Analysis Batch: 42907** Prep Batch: 42567

Spike LCS LCS %Rec. Result Qualifier Added Limits Analyte Unit %Rec HFPO-DA 0.0200 0.01792 ug/Sample 90 60 - 140

LCS LCS

Isotope Dilution %Recovery Qualifier Limits 13C3 HFPO-DA 25 - 150 49

Lab Sample ID: LCSD 140-42567/3-B **Client Sample ID: Lab Control Sample Dup** Prep Type: Total/NA

Matrix: Air

Analysis Batch: 42907 Prep Batch: 42567 Spike LCSD LCSD %Rec **RPD**

Analyte Added Result Qualifier Unit %Rec Limits RPD Limit HFPO-DA 0.0200 0.01577 ug/Sample 79 60 - 140

LCSD LCSD

%Recovery Qualifier Isotope Dilution Limits 13C3 HFPO-DA 25 - 150 51

Lab Sample ID: MB 140-42711/14-B Client Sample ID: Method Blank Prep Type: Total/NA

Matrix: Air

Analysis Batch: 42757 Prep Batch: 42711

MB MB

Analyte Result Qualifier **MDL** Unit Prepared Analyzed Dil Fac RI HFPO-DA 0.000500 0.0000825 ug/Sample 09/14/20 11:33 09/15/20 11:56 0.0001444 J MB MB %Recovery Qualifier Isotope Dilution Limits Prepared Analyzed Dil Fac

13C3 HFPO-DA 25 - 150 <u>09/14/20 11:33</u> <u>09/15/20 11:56</u> 95

Lab Sample ID: MB 140-42711/1-B

Prep Type: Total/NA **Matrix: Air Analysis Batch: 42757** Prep Batch: 42711

MB MB

Analyte Result Qualifier **MDL** Unit Prepared Analyzed Dil Fac HFPO-DA ND 0.000500 0.0000825 ug/Sample 09/14/20 11:33 09/15/20 11:47 MB MB Qualifier Isotope Dilution Dil Fac %Recovery Limits Prepared Analyzed

13C3 HFPO-DA 25 - 150 09/14/20 11:33 09/15/20 11:47 99

Lab Sample ID: LCS 140-42711/2-B

Matrix: Air Prep Type: Total/NA Prep Batch: 42711 **Analysis Batch: 42757**

Spike LCS LCS %Rec. Added Result Qualifier Limits

Analyte Unit %Rec HFPO-DA 0.0100 0.009984 ug/Sample 100 60 - 140

LCS LCS Isotope Dilution %Recovery Qualifier

Limits 13C3 HFPO-DA 97 25 - 150

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Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

QC Sample Results

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

Job ID: 140-20292-1

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

LCSD LCSD %Recovery Qualifier

103

Isotope Dilution

13C3 HFPO-DA

Lab Sample ID: LCSD 140-42711/3-B Matrix: Air Analysis Batch: 42757			C	Client Sam	ple	ID: Lab	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	0.009072		ug/Sample	_	91	60 - 140	10	30

Limits

25 - 150

0

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QC Association Summary

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

Job ID: 140-20292-1

LCMS

Prep Batch: 42561

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

Prep Batch: 42567

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

Cleanup Batch: 42591

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

Cleanup Batch: 42704

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

Prep Batch: 42711

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

Cleanup Batch: 42725

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

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QC Association Summary

Client: The Chemours Company FC, LLC Project/Site: August Field QC Samples - M0010 Job ID: 140-20292-1

LCMS (Continued)

Cleanup Batch: 42725 (Continued)

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

Analysis Batch: 42757

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

Cleanup Batch: 42822

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

Analysis Batch: 42824

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

Analysis Batch: 42907

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

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Lab Chronicle

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

Lab Sample ID: 140-20292-1

Job ID: 140-20292-1

Client Sample ID: GF-2564,2565 QC VEN CB M0010 FH BT Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

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

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

Lab Sample ID: 140-20292-2

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

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

Client Sample ID: GF-2568 QC VEN CB M0010 IMP 1,2&3 Lab Sample ID: 140-20292-3

CONDENSATE BT

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

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

Client Sample ID: GF-2570 QC VEN CB M0010 Lab Sample ID: 140-20292-4

BREAKTHROUGH XAD-2 RESIN TUBE BT

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

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

Job ID: 140-20292-1

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

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB Lab Sample ID: 140-20292-5

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

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

Client Sample ID: GF-2572 QC VEN CB M0010 MEOH WITH Lab Sample ID: 140-20292-6

5%/NH4OH RB

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

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

Client Sample ID: GF-2573 QC VEN CB M0010 COMBINED Lab Sample ID: 140-20292-7

GLASSWARE RINSES (MEOH/5% NH4OH) PB

Date Collected: 09/01/20 00:00 Matrix: Air

Date Received: 09/04/20 12:35

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

Client Sample ID: A-7162, MEDIA CHECK XAD Lab Sample ID: 140-20292-8

Date Collected: 09/01/20 00:00

Date Received: 09/04/20 12:35

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

Client Sample ID: A-7163, MEDIA CHECK FILTER Lab Sample ID: 140-20292-9

Date Collected: 09/01/20 00:00

Date Received: 09/04/20 12:35

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

Page 16 of 27

Matrix: Air

Matrix: Air

Job ID: 140-20292-1

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

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42561/14-B Date Collected: N/A

Matrix: Air

Date Received: N/A

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

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42561/1-B Date Collected: N/A Matrix: Air

Date Received: N/A

	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	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:11	JRC	TAL KNX
	Instrumer	it ID: LCA								

Client Sample ID: Method Blank

Lab Sample ID: MB 140-42567/1-B Date Collected: N/A Matrix: Air

Date Received: N/A

Batch Batch Dil Initial Final Batch **Prepared** Method Amount Number **Prep Type** Type Run **Factor Amount** or Analyzed Analyst Lab Total/NA Prep None 1 Sample 360 mL 42567 09/09/20 15:03 DWS TAL KNX Total/NA 180 mL 42704 Cleanup Split 10 mL 09/14/20 09:32 DWS TAL KNX Total/NA Analysis 537 (modified) 1 42907 09/18/20 16:35 JRC TAL KNX Instrument ID: LCA

Client Sample ID: Method Blank

Instrument ID: LCA

Lab Sample ID: MB 140-42711/14-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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:56	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: Method Blank Lab Sample ID: MB 140-42711/1-B

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

Batch Batch Dil Initial Batch Final Prepared Method **Prep Type** Type Run **Factor Amount** Amount Number or Analyzed Analyst Lab Total/NA Prep None 1 Sample 10 mL 42711 09/14/20 11:33 DWS TAL KNX Total/NA Cleanup Split 10 mL 10 mL 42725 09/14/20 14:08 DWS TAL KNX Total/NA Analysis 537 (modified) 42757 09/15/20 11:47 JRC TAL KNX

Eurofins TestAmerica, Knoxville

Matrix: Air

Job ID: 140-20292-1

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

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-42561/2-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	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:29	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: Lab Control Sample Lab Sample ID: LCS 140-42567/2-B

Date Collected: N/A Matrix: Air

Date Received: N/A

	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	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 16:43	JRC	TAL KNX
	Instrumer	t ID: LCA								

Lab Sample ID: LCS 140-42711/2-B **Client Sample ID: Lab Control Sample**

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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:05	JRC	TAL KNX
	. ,	nt ID: LCA								

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-42561/3-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	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:38	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-42567/3-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	360 mL	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 16:52	JRC	TAL KNX
	Instrumer	nt ID: LCA								

Eurofins TestAmerica, Knoxville

Matrix: Air

Matrix: Air

Lab Chronicle

Client: The Chemours Company FC, LLC

Job ID: 140-20292-1

Project/Site: August Field QC Samples - M0010

Client Sample ID: Lab Control Sample Dup

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

Date Collected: N/A Matrix: Air

Date Received: N/A

	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	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:14	JRC	TAL KNX
	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: August Field QC Samples - M0010

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 Dat
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-21
Colorado	State	TN00009	02-28-21
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	07-01-21
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	LA110001	12-31-12 *
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-21
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-21
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

Job ID: 140-20292-1

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

Method Summary

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

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 Solit	None	TAI 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

Job ID: 140-20292-1

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Sample Summary

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

Job ID: 140-20292-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Air	09/01/20 00:00	09/04/20 12:35
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	Air	09/01/20 00:00	09/04/20 12:35
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT	Air	09/01/20 00:00	09/04/20 12:35
40-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT	Air	09/01/20 00:00	09/04/20 12:35
10-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	Air	09/01/20 00:00	09/04/20 12:35
0-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB	Air	09/01/20 00:00	09/04/20 12:35
0-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	Air	09/01/20 00:00	09/04/20 12:35
0-20292-8	A-7162, MEDIA CHECK XAD	Air	09/01/20 00:00	09/04/20 12:35
10-20292-9	A-7163, MEDIA CHECK FILTER	Air	09/01/20 00:00	09/04/20 12:35

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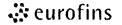
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Request for Analysis/Chain-of-Custody – RFA/COC #003 The Chemours Company – Fayetteville NC Facility HFPO-DA Testing on VEN Carbon Bed Field QC Samples



Environment Testing
TestAmerica

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

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

Analytical Testing QC Requirements:

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

Project Deliverables:

Report analytical results on TALS Reports and in data packages. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
UEDO DA (040 N. 40050 40 0)	445 45 405 4 4 1 1	A COMPANY OF MALE A
HFPO-DA (CAS No. 13252-13-6)	14 Days to Extraction; 40 Days to Analysis	



Project Field Sample Sample QC Sample No./Sample Collection Require Bottle/ Run 15 Coding ID Date -ments Container Sample Type/Analysis No. **Analytical Specifications** Particulate Filter (90 mm GF-2564 QC VEN QC Blank 125 mL Knoxville: Spike sample with the CB M0010 Filter Train HDPE Wide-Whatman Glass Isotope Dilution Internal Standard BT Mouth Bottle Microfiber) (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Method 0010 Blank Train Filter sample. HFPO-DA Analysis Knoxville: Analyze for HFPO-DA. **GF-2565 QC VEN** QC Front Half of Filter Holder Blank 125 mL Knoxville: Use this solvent sample in CB M0010 FH of Train HDPE Wide-& Probe Methanol/5% the Particulate Filter extraction. Filter Holder & Mouth Bottle Ammonium Hydroxide Probe MeOH Rinse Rinse BT Method 0010 Blank Train HFPO-DA Analysis GF-2566 QC VEN QC Blank XAD-2 Resin XAD-2 Resin Tube Knoxville: Spike sample with the CB M0010 XAD-2 Train Tube Isotope Dilution Internal Standard Resin Tube BT (IDIS) at the regular level. Use the Method 0010 Blank Train Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to HFPO-DA Analysis assist the solvent extraction of the XAD-2 resin sample. Knoxville: Analyze for HFPO-DA.

Environment Testing
TestAmerica

Project Field Sample Sample QC Sample No./Sample Collection Require Bottle/ Run **Coding ID** Date -ments Container Sample Type/Analysis Analytical Specifications No. Blank **GF-2567 QC VEN** QC 125 mL Back Half of Filter Holder Knoxville: Use this solvent sample Train CB M0010 BH of HDPE Wide-& Coil Condenser and the Impinger Glassware Methanol Filter Holder & Coil Mouth Bottle Methanol/5% Ammonium Rinse in the XAD-2 Resin extraction. 9/1/20 Condenser MeOH Hydroxide Rinse Rinse BT Knoxville: Analyze for HFPO-DA. Method 0010 Blank Train HFPO-DA Analysis QC Impinger #1, #2 & #3 GF-2568 QC VEN 500 mL Blank Knoxville: Measure the volume of the CB M0010 Train HDPE Wide-Condensate Impinger Composite and forward a 250 Impingers 1,2 & 3 Mouth Bottle mL portion to Knoxville for analysis. Condensate BT Method 0010 Blank Train Knoxville: Analyze for HFPO-DA. HFPO-DA Analysis **GF-2569 QC VEN** QC Blank 250 mL Impinger Glassware Knoxville: Use this solvent sample in CB M0010 Train HDPE Wide-Methanol/5% Ammonium the XAD-2 Resin Extraction. **Hydroxide Rinse** Impinger Mouth Bottle Glassware MeOH Rinse BT Method 0010 Blank Train 15 HFPO-DA Analysis XAD-2 Resin GF-2570 QC VEN QC Blank **Breakthrough XAD-2** Knoxville: Spike sample with the Isotope Dilution Internal Standard CB M0010 Train Tube Resin Tube Breakthrough (IDIS) at the regular level and perform XAD-2 Resin Tube the regular XAD-2 Resin Extraction. Method 0010 Blank Train BT Knoxville: Analyze for HFPO-DA. HFPO-DA Analysis **GF-2571 QC VEN** QC Reagent 500 mL Deionized (DI) Water Knoxville: Spike sample with the CB M0010 DI Blank HDPE Wide-Reagent Blank Isotope Dilution Internal Standard Mouth Bottle Water RB (IDIS) at the regular level. Method 0010 Train Knoxville: Analyze for HFPO-DA. HFPO-DA Analysis GF-2572 QC VEN QC Reagent 250 mL Methanol with 5% NH₄OH Knoxville: Spike sample with the CB M0010 MeOH Blank HDPE Wide-Reagent Blank Isotope Dilution Internal Standard with 5% NH₄OH Mouth Bottle (IDIS) at the regular level. RB Method 0010 Train Knoxville: Analyze for HFPO-DA. HFPO-DA Analysis

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



Environment Testing TestAmerica

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2573 QC VEN CB M0010 Combined Glassware Rinses	QC	9/11	Proof Blank	125 mL HDPE Wide- Mouth Bottle	Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank	Knoxville: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level.
(MeOH/5% NH₄OH) PB		9			Method 0010 Train	Knoxville: Analyze for HFPO-DA.
					HFPO-DA Analysis	

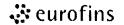
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Environment Testing TestAmerica

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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:	RT1.1/CT1.10
(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):	HAWA DELIVORED IND (NETDOX SEXES
	,

7	V		
Custody Trar	nsfer:		
Relinquished By:	Patrick Hrong	RAmboll Company	9/3/ ₃₀ 2030
Accepted By:	Do 3 V (all all)	ETA KNAX Company	9/3/20 2030 Date/Time
Relinquished By:	Dong Call	ETA KIUX	9/4/20 1033
Accepted By:	Name Name	Company FN-W-X Company	Date/Time 9-4-20 ねょ3 く Date/Time
Relinquished By:	Name	Company	Date/Time
Accepted By:	Name	Company	Date/Time
Relinquished By:	Name		Date/Time
Accepted By:		Company	
	Name	Company	Date/Time

Log In Number:

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

Review Items	Yes	8.	¥.	If No, what was the problem?	Comments/Actions Taken	
1. Are the shipping containers intact?	7		\	☐ Containers, Broken		
2. Were ambient air containers received intact?				☐ Checked in lab		
3. The coolers/containers custody seal if present, is it intact?				□ Yes □ NA		
4. Is the cooler temperature within limits? (> freezing				☐ Cooler Out of Temp, Client		
temp. of water to 6°C, VOS1: 10°C)	\			Contacted, Proceed/Cancel		
Inermometer ID: 3.66 Correction factor: 0.0		· · · · · · · · · · · · · · · · · · ·		 Cooler Out of Temp, Same Day Receipt 		
5. Were all of the sample containers received intact?				☐ Containers, Broken		
6. Were samples received in appropriate containers?	\			☐ Containers, Improper; Client Contacted: Proceed/Cancel		
7. Do sample container labels match COC?				□ 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?	<u> </u>			☐ COC; No Date/Time; Client		
			1	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?	1			☐ 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	Box 16A: pH Box 18A: Residual Preservation Chlorine	dual
15. Were samples received within holding time?				☐ Holding Time - Receipt		
16. Were samples received with correct chemical			\	☐ pH Adjusted, pH Included	Lot Number:	
preservative (excluding Encore)?			<u> </u>	(See box 16A)	Exp Date:	
			1	☐ 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	T HIRE:	
(e.g. 1613B, 1668) Chlorine test strin lot number		· · · · · · · · · · · · · · · · · · ·	\			ii v Azimyiman
10 Ear 1612B water countles is ulf 09		1	1	O 18 months lake to address		
20. For rad samples was sample activity info. Provided?				☐ Project missing info		·····
Project #: 1400432 PM Instructions:						
						1
Sample Receiving Associate:			Date:	Date: 9-7-3 //	QA026R32.doc, 062719	
_			ı			

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.
- 3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
- 4) Record data and information in the GREEN cells, YELLOW cells are calculated.

			_								_	INITIAL	FINAL	AVG (P _{bar})						
	DATE:	1/15/2020		MET	ER SERIAL #:	мв 8	BAR	ROMETR	IC PRES	SURE (i	n Hg):	30.19	30.19	30.19						
METER	PART #:	13276842	CR	ITICAL ORIFICE S	ET SERIAL #:	1393														
		к'	TESTED					TE	EMDED A	TURES	· F		ELAPSED					Y % Diff	Y % Diff]
		FACTOR	VACUUM	DGI	M READINGS	(FT³)	AMBIENT					DGM	TIME (MIN)	DGM DH	(1)	(2)	(3)	to	with other	
ORIFICE :	# RUN #	(AVG)	(in Hg)	INITIAL	FINAL	NET (V _m)				INITIAL	- 1		q	(in H ₂ O)	V _m (STD)	V _{cr} (STD)	Y	Average Y	orifices	DH⊚
	•					· · · · ·						•				•				
	1	0.306	23.5	151.919	158.115	6.196	70.5	76	78	75	76	76.25	15.00	0.44	6.1634	6.0181	0.976			1.53
11	2																			
	3																			
	1					1										AVG =	<u>0.976</u>	0.16	0.66	
16	1	0.4268	22.5	158.115	163.916	5.801	71	77	79	76	77	77.25	10.00	0.9	<u>5.7662</u>	<u>5.5933</u>	0.970			<u>1.61</u>
	2																			
	3															AVG =	0.970	-0.50	-0.66	
] ,	0.4961	21.5	163.916	170.574	6.658	71.1	79	80	77	78	78.5	10.00	1.1	6.6059	6.5009	0.984			1.45
18	2					1														
	3																			
	-					-								\equiv		AVG =	0.984	0.94	1.51	
	1	0.7131	19	170.654	180.354	9.70	71.1	80	81	78	79	79.5	10.00	2.5	9.6389	9.3444	0.969			1.60
26	2																			
	3																			
	1					1										AVG =	0.969	-0.56	-0.52	
31	1	0.8358	17.5	180.354	191.665	11.311	71.4	81	84	79	80	81	10.00	3.5	11.2357	10.9492	0.974			1.63
] "	2		 											\vdash						
	3															***	0.074			
																AVG =	0.974	-0.04	0.52	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS: The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y =

AVERAGE DH_@ = 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 °K/mm Hg (Metric)

 T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

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

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

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

 $T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)$

K' = Average K' factor from Critical Orifice Calibration

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

= 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 _{bar})						
	DATE:	1/14/2020		MET	ER SERIAL #:	MB 15	BAR	ROMETR	C PRES	SURE (i	n Hg):	30.27	30.27	30.27						
METER	PART #:		CR	ITICAL ORIFICE S	ET SERIAL #:	1393														
		К'	TESTED					т.	MDEDA	TURES 9			ELAPSED					Y % Diff	Y % Diff	
		FACTOR	VACUUM	200	1 READINGS	(FT ³)	AMBIENT					DGM	TIME (MIN)	DGM DH	(1)	(2)	(2)	i	with other	
ORIFICE	# DIIN #	(AVG)	(in Hg)	INITIAL	FINAL	NET (V _m)				INITIAL		1	q	(in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	to Average Y	orifices	DH⊚
OKIFICE	W KUN #	(AVG)	(III H9)	INITIAL	FINAL	IVEI (Vm)							, ч	(111120)	V _m (31D)	V _{cr} (31D)		Average 1	ornices	DII _®
] ,	0.306	23.5	240.408	246.224	5.816	70.4	65	67	65	67	66	15.00	0.5	5.9147	6.0346	1.020			1.77
11	2	0.306	25.5	240.400	240.224	3.010	70.4		- 0,		- 0,	00	15.00	0.5	<u> </u>	0.0370	1.020			4.77
	3	0.306				1														
	1 ,	0.300				1										AVG =	1.020	0.68	1.04	
] ,	0.4268	22.5	246.224	251.697	5.473	70.4	67	68	67	68	67.5	10.00	1	<u>5.5568</u>	5.6113	1.010			1.81
16	2	0.4268				1														
	3	0.4268				1														
	-					_										AVG =	1.010	-0.35	-1.03	
	1	0.4961	20.5	251.697	257.984	6.287	70.5	68	70	68	70	69	10.00	1.2	6.3682	6.5218	1.024			1.61
18	2	0.4961																		
	3	0.4961																		
	-				'	-										AVG =	1.024	1.06	1.87	
	1	0.7131	17.5	257.984	267.179	9.195	70.9	70	71	70	71	70.5	10.00	2.7	9.3212	9.3709	1.005			1.75
26	2	0.7131																		
	3	0.7131																		
	_					-										AVG =	1.005	-0.79	-0.21	
	1	0.8358	17.5	267.179	277.971	10.792	71.1	71	73	71	73	72	10.03	3.6	10.9329	11.0142	1.007			1.70
31	2	0.8358]														
	3	0.8358																		
				1		=										AVG =	1.007	-0.59	0.21	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS: The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DH@ = 1.73

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

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

 T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

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

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

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

 $T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)$

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

= DGM calibration factor

Initial Impinger Outlet Thermocouple Calibration

		Ice Bath			Ambient		Н	ot Water Bath			
	Reference	Thermocouple		Reference	Thermocouple		Reference	Thermocouple			Data
ID Number	Temperature		Deviation*		Temperature	Deviation*	Temperature	Temperature	Deviation*	Technician	Date Performed
	(°Rk)	Temperature (°Rk)		Temperature (°Rk)	(°Rk)		(°Rk)	(°Rk)			Periorified
IO-1	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-2	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-3	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-4	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	669.67	-0.3%	JLS	01/30/20
IO-5	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-6	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-7	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-8	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	669.67	-0.3%	JLS	01/30/20
IO-9	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-10	491.67	492.67	0.2%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-11	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	672.67	0.1%	JLS	01/30/20
IO-12	491.67	492.67	0.2%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-13	NA			NA			NA			JLS	01/30/20
IO-14	491.67	494.67	0.6%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-15	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	670.67	-0.1%	JLS	01/30/20
IO-16	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-17	NA			NA			NA			JLS	01/30/20
IO-18	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	669.67	-0.3%	JLS	01/30/20
IO-19	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20

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



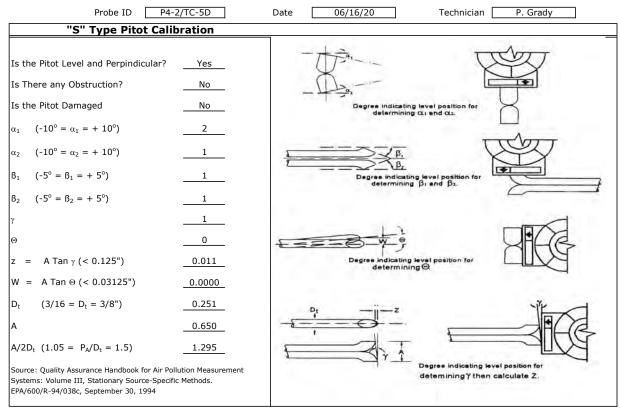
Initial Oven Box Thermocouple Calibration

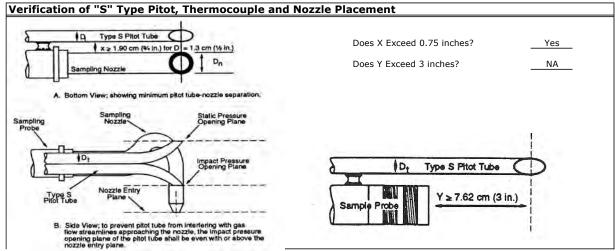
		Ice Bath			Ambient		Н	ot Water Bath			
ID Number	Reference Temperature (°R)	Thermocouple Temperature (°R)	Deviation*	Reference Temperature (°R)	Thermocouple Temperature (°R)	Deviation*	Reference Temperature (°R)	Thermocouple Temperature (°R)	Deviation*	Technician	Date Performed
OB-1	491.67	492.67	0.2%	524.67	523.67	-0.2%	671.67	673.67	0.3%	JLS	01/17/20
OB-2	491.67	492.67	0.2%	524.67	524.67	0.0%	671.67	669.67	-0.3%	JLS	01/17/20
OB-3	491.67	492.67	0.2%	524.67	524.67	0.0%	671.67	669.67	-0.3%	JLS	01/17/20
OB-4	491.67	493.67	0.4%	524.67	524.67	0.0%	671.67	670.67	-0.1%	JLS	01/17/20
OB-A	491.67	492.67	0.2%	524.67	526.67	0.4%	671.67	673.67	0.3%	JLS	01/17/20
ОВ-В	491.67	492.67	0.2%	524.67	526.67	0.4%	671.67	672.67	0.1%	JLS	01/17/20
OB-5	491.67	494.67	0.6%	524.67	523.67	-0.2%	671.67	669.67	-0.3%	JLS	01/17/20
ОВ-С	491.67	492.67	0.2%	524.67	525	0.0%	671.67	673.67	0.3%	JLS	01/17/20
OB-6	491.67	493.67	0.4%	524.67	525	0.0%	671.67	669.67	-0.3%	JLS	01/17/20
OB-7	491.67	494.67	0.6%	524.67	525	0.0%	671.67	671.67	0.0%	JLS	01/17/20
OB-E	491.67	494	0.4%	524.67	528	0.6%	671.67	668.67	-0.4%	JLS	01/17/20
OB-10	491.67	493.67	0.4%	524.67	525.67	0.2%	671.67	671.67	0.0%	JLS	01/17/20
OB-11	491.67	493.67	0.4%	524.67	525.67	0.2%	671.67	671.67	0.0%	JLS	01/17/20

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



Initial Sample Probe Calibration Form





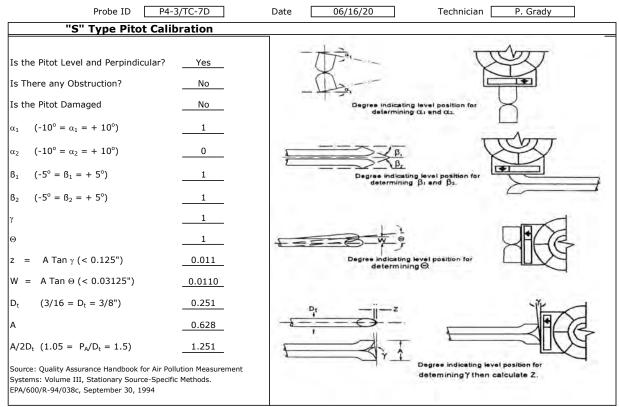
Thermocouple Calibrat	ion								
					0				0
		Ice Bath ⁽	'R	A	o	R	Boil	ling Water	· [∪] R
	1	2	3	1	2	3	1	2	3
Reference Temp	492.3	492.3	492.3	533.4	533.4	533.4	671.5	671.5	671.5
Thermocouple Temp	492.9	492.8	492.8	532.7	532.6	532.7	673.1	673	673
Difference (%)	0.1	0.1	0.1	-0.1	-0.1	-0.1	0.2	0.2	0.2

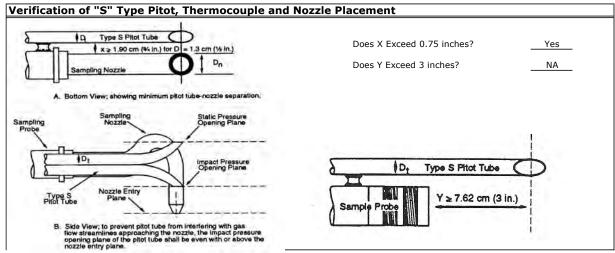
Temperature values must be within 1.5% of reference temperature

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

Certified By: _____ P. Grady ____ Date: ____06/16/20

Initial Sample Probe Calibration Form





Thermocouple Calibration										
	Ico Bath (O _D		. ,	\mhiant ⁰	D		Boi	ling Water	, ⁰ D
1	2	3	1	1	2	3		1	2	3
492.3	492.3	492.3		533.4	533.4	533.4		671.5	671.5	671.5
492.7	492.6	492.6		533.1	533.2	533.2		671.8	671.8	671.8
0.1	0.1	0.1		-0.1	0.0	0.0		0.0	0.0	0.0
	1 492.3 492.7	Ice Bath (1 2 492.3 492.7 492.6	Ice Bath ^o R 1 2 3 492.3 492.3 492.3 492.7 492.6 492.6	Ice Bath ^o R 1 2 3 492.3 492.3 492.3 492.7 492.6 492.6	Ice Bath OR A 1 2 3 492.3 492.3 492.3 492.7 492.6 492.6 533.1	Ice Bath °R Ambient ° 1 2 3 492.3 492.3 492.3 492.7 492.6 492.6 533.1 533.2	Ice Bath °R Ambient °R 1 2 3 492.3 492.3 492.3 492.7 492.6 492.6 533.1 533.2 533.2	Ice Bath °R Ambient °R 1 2 3 492.3 492.3 492.3 492.7 492.6 492.6 533.1 533.2 533.2	Ice Bath °R Ambient °R Boi 1 2 3 1 2 3 1 492.3 492.3 492.3 533.4 533.4 533.4 671.5 492.7 492.6 492.6 533.1 533.2 533.2 671.8	Ice Bath °R Ambient °R Boiling Water 1 2 3 1 2 3 1 2 3 1 2 3 671.5 671.5 671.5 671.8

Temperature values must be within 1.5% of reference temperature

I certify that the probe II $\underline{\hspace{0.2cm}}$ P4-3/TC-7D $\underline{\hspace{0.2cm}}$ 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

TECHN	DATE:	07/30/20 A. Anderson	CRITIC	CAL ORIFICE S	IETER BOX #: ET SERIAL #:		BARON	METRIC	PRESS	GURE (ii		INITIAL 29.87	FINAL 29.87	AVG (P _{bar}) 29.87					
		К'	TESTED					TE	MPERA	TURES	°F		ELAPSED					Y % Diff	
	ı	FACTOR	VACUUM		GM READINGS	(FT ³)	AMBIENT			l		DGM	TIME (MIN)	DGM DH	(1)	(2)	(3)	to	
ORIFICE #	RUN #	(AVG)	(in Hg)	INITIAL	FINAL	NET (V _m)		INITIA	FINAL	INITIAL	FINAL	AVG	q	(in H ₂ O)	V _m (STD)	V _{cr} (STD)	Y	Average Y	DH⊚
	1				1	1		I	1		ı	l							
	1					-													
	2					1								\vdash					
	3															AVG =			
	١.		I			1							12.22						
	1	0.4961	21	739.340		6.685	74	69	70	69	69	69.25	10.00	1.2	<u>6.6790</u>	6.4145	0.960	<u>-0.29</u>	1.64
18	2	0.4961	21	746.02		6.667	72	70	72	69	70	70.25	10.00	1.2	<u>6.6484</u>	<u>6.4265</u>	0.967	<u>0.36</u>	<u>1.63</u>
	3	0.4961	21	752.692	759.397	6.705	73	72	73	70	71	71.5	10.00	1.2	<u>6.6706</u>	<u>6.4205</u> AVG =	<u>0.963</u> 0.963	<u>-0.07</u>	<u>1.63</u>
	١.					1										AVG =	0.903		
	1					1													
	2					1								\vdash					
	3]										AVG =			
																AVG =			
																_			_
AVERAGE DRY GAS METER CALIBRATION FACTOR, Y =									OR, Y =	0.9	963								
																· / L			_
PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y =										ΓOR, Υ =[0.9	975]						
PERCENT DIFFERENCE =										RENCE =	-1	L. 2]						

POST TEST DRY GAS METER CALIBRATION

			7								г	INITIAL	FINAL	AVG (P _{bar})					
	DATE:	09/09/20	4	ME	TER BOX #:	15	BAROM	IETRIC	PRESS	URE (ir	n Hg):	30.22	30.22	30.22					
TECHN	NICIAN:	A. Anderson	CRITIC	AL ORIFICE SET	ΓSERIAL#:	1393													
			T								.=							V 0/	1
		K'	TESTED			2.				TURES			ELAPSED					Y % Diff	
	T	FACTOR	VACUUM		4 READINGS		AMBIENT	DGM I INITIAL			- 1	DGM AVG	TIME (MIN)	DGM DH	(1)	(2)	(3)	to	<u></u>
ORIFICE #	RUN #	(AVG)	(in Hg)	INITIAL	FINAL	NET (V _m)		INTITAL	FINAL	INTITAL	FINAL	AVG	q	(in H₂O)	V _m (STD)	V _{cr} (STD)	Y	Average Y	DH _@
	1																		
	2																		
	3																		
	1 ,					l										AVG =			
	1	0.4961	21.5	370.615	377.048	6.433	73	74	74	74	74	74	10.00	1.3	<u>6.4460</u>	6.4957	1.008	0.17	1.74
18	2	0.4961	21.5	377.048	383.50	6.452	73	74	74	74	74	74	10.00	1.3	<u>6.4650</u>	6.4957	1.005	<u>-0.12</u>	<u>1.74</u>
	3	0.4961	21.5	383.50	389.941	6.441	74	74	74	74	74	74	10.00	1.3	<u>6.4540</u>	6.4896	1.006	<u>-0.05</u>	<u>1.74</u>
	•					1										AVG =	1.006		
	1																		
	2																		
	3																		
																AVG =			
AVEDACE DDV CAC METER CALIDRATION FACTOR V -										OP V -	1.0	006]						
AVERAGE DRY GAS METER CALIBRATION FACTOR, $Y = \lfloor$												ı							
PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y =										1.0	013	1							
PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y =										10K, 1 =[1						
Ţ										Γ).7	1						
PERCENT DIFFERENCE =									RENCE =		<i>,,,</i>]							

Post-Test Sample Probe Calibration Form

Probe ID P4-2			
Visual Inspection			
Do pitot tips appear to be damaged?	<u>NO</u>		
Do thermocouple wires appear broken or shorted?	NO		
Do all components appear to be in good condition?	YES		
Post-Test Thermocouple Calibration			
Reference Temperature ⁰ F	Thermocouple Temperature ^O F	Difference ^O F	
65	65	0	
Reference Thermocouple: Fluke S/N: 83450033 traceable to the Untied State	rs National Institute of Standards and Technology		
Accepatable Deviation +/- 2 °F			
	x Acceptable		
	Unacceptable		
Date 09/11/20	Techniciaı	nAA	



Post-Test Sample Probe Calibration Form

Probe ID P4-3			
Visual Inspection			
Do pitot tips appear to be damaged?	NO		
Do thermocouple wires appear broken or shorted?	NO		
Do all components appear to be in good condition?	YES		
Post-Test Thermocouple Calibration			
Reference Temperature ^O F	Thermocouple Temperature ⁰ F	Difference ⁰ F	
65	65.8	8	
Reference Thermocouple: Fluke S/N: 83450033 traceable to the Untied States N	National Institute of Standards and Technology		
Accepatable Deviation +/- 2 ^O F			
	x Acceptable		
	Unacceptable		
Date09/11/20	Technician	AA	

