West Virginia Department of Environmental Protection
Division of Air Quality

Fact Sheet

For Final Minor Modification Permitting Action Under 45CSR30 and Title V of the Clean Air Act

This Fact Sheet serves to address the changes specific to this Minor Modification, and shall be considered a supplement to the Fact Sheet corresponding with the Title V operating permit issued on October 1, 2021.

Permit Number: **R30-10700182-2021**
Application Received: **September 27, 2024 (MM11)**
November 18, 2024 (MM12)
January 10, 2025 (MM13)
January 14, 2025 (MM14)
Plant Identification Number: **03-54-10700182**
Permittee: **The Chemours Company FC, LLC**
Facility Name: **Washington Works**
Business Unit: **Fluoropolymers (Part 2 of 14)**
Mailing Address: **P.O. Box 1217, Washington, WV 26181-1217**

Permit Action Number: *MM11 through MM14* Revised: *August 15, 2025*

Physical Location:	Washington, Wood County, West Virginia
UTM Coordinates:	442.310 km Easting • 4,346.800 km Northing • Zone 17
Directions:	From I-77, take the Route 50 Bypass around Parkersburg towards Ohio. Take the last exit prior to the bridge exit from the Route 50 bypass on to DuPont Road. At the light turn left on to DuPont Road. Chemours Washington Works is approximately ½ mile on DuPont Road on the righthand side.

Facility Description

Within the Fluoropolymers Business Unit, there are the following Fluoroproduct production areas: C1, C2, C3, T1-T4 and T7, T5, and T6. Each area produces a product or family of products by varying operating conditions and small adjustments to raw material ratios or material feed rates. The following is a general description of the operations in each of the Fluoroproduct production areas within the Fluoropolymers Business Unit.

C1 Area

Within the "C1" area of Chemours Washington Works is a process capable of producing a variety of products in dispersion, flake and cube form. These products are made from fluoromonomers produced at the Washington Works Facility along with monomers from outside sources. The main product from this process is TEFLON® PFA.

C2 Area

The C2 Area manufactures fluoropolymer resins by precharging fluoromonomers into reactors along with demineralized water. Aqueous solutions of catalyst salts are then pumped into the reactors to initiate polymerization. Additional fluoromonomers are fed into the reactors as the reaction proceeds. Unreacted fluoromonomers are vented to recycling facilities at the end of the reaction. The remaining fluoropolymer and water slurry is pumped to agglomerators that mechanically separate the fluoropolymer from the water. Alternatively, the reactor output may be sent to facilities which concentrate the dispersion to higher solids and package the dispersion for sale. From the agglomerators, the polymer is conveyed to devices where water and other low boiling compounds are removed prior to extrusion. The polymer is then converted to pellets via an extrusion process. The pellets are hot air sparged to remove additional traces of miscellaneous volatile fluorocarbons, elutriated to remove traces of polymer fines and packaged for distribution.

C3 Area

The C3 area manufactures various molecular weight Telomers, which are short, straight chain carbon-fluorine compounds. Telomer products are most commonly made up of the short chain compounds with four to fourteen carbons. There are several recipes, one of which is selected to make a desired product. All recipes perform similarly in that:

- Lower molecular weight (MW) Telomers are added to a reactor.
- Monomer and other raw materials are added and reacted to form more lower MW Telomers and to convert lower MW Telomers to higher MW Telomers.
- At the end of reaction, the reaction mass is transferred to distillation which is used to separate the different MW Telomers. Lower MW Telomers are put into hold tanks for re-use in the reactor. Higher MW Telomers remain in the distillation pot and become Telomer product.
- The Telomer product is filtered and transferred to product storage tanks.
- The finished Telomer product is loaded into tank trailers for shipment.

T1-T4, and T7 Areas

The T1-T4, and T7 areas produce final products fluoromonomers tetrafluoroethylene (TFE) and hexafluoropropylene (HFP); an intermediate, perfluorocyclobutane; and byproducts hydrogen chloride (HCl, aqueous) and calcium fluoride (CaF_2, solid). The production facility is divided into the following sections: T1-TFE Synthesis, T2-TFE Refining, T3-HFP Synthesis, T4-HFP Refining, and T7-Utilities.

Fluorocarbons are reacted by pyrolysis in the T1 area and the products are separated to form crude TFE and recovered byproducts. TFE is refined in the T2 area. In-process materials and intermediates are reacted by pyrolysis in the T3 area to form crude HFP that is then refined in the T4 area.

The T7 area is comprised of several utilities, including: refrigeration and cold brine supply; the unit vacuum systems for maintenance clearing of equipment; waste acid neutralization; and the thermal converter. The thermal converter combusts fluorine-containing byproduct gases from the T1-T4 process areas and from polymerization operations in the C1, C2, C3, and T6 areas; and from two different non-hazardous fluorine-containing liquid streams to produce aqueous hydrogen fluoride (HF) which is reacted with slaked lime (calcium oxide or CaO) to form CaF_2.

T5 Area

The T5 area produces fluoropolymer resin. The basic processes used are polymerization, drying, and modification. The resin is produced by water based emulsion polymerization in one of two reactor units. Water, monomer (primarily tetrafluoroethylene), process aids, and other minor ingredients are introduced to the reactor. The reaction starts under elevated pressure, but proceeds to an endpoint at sub-ambient pressure. The resin is removed as slurry and is stored in one of several tanks pending further treatment and drying. The polymer slurry is processed and dried. The wet polymer passes through one of two dryers. Emissions from either dryer pass through cyclone separators to recover particulate matter. Both cyclone systems employ a water spray to improve effectiveness. The material recovered from the cyclones is returned to the process. Dried resin is transferred to a pack-out room where it is drummed using automated equipment. Air from the pack-out room is exhausted though a scrubber. The recovered material from the pack-out exhaust is not recycled to the process.

T6 Area

The Teflon® T6 area produces TFE based homopolymers in four agitated batch reactors. The reaction takes place in an aqueous medium, and a milk white raw polymer dispersion in water is produced. A portion of the raw dispersion production is dried and sold as powder, and a portion is processed and sold as a finished aqueous dispersion.

Copolymer dispersion products are also made. A batch is started by adding water and other ingredients to the reactor. Polymerization takes place in the aqueous phase at high temperature and pressure. At the end of each batch, most of the unreacted material is recycled for reuse or sent to the thermal converter. Some products are made by partially concentrating the reactor output in a water/solids separation vessel where some of the water is removed. For product sold as fine powder, the material is dried at high temperature with subsequent removal of impurities. The dried product is cooled and packaged.

Emissions Summary

This combination of minor modifications results in the following emission changes:

Pollutant	Change in Potential Emissions (tpy)
Particulate Matter ($PM_{2.5}$)	2.08
Particulate Matter (PM_{10})	4.67
Hazardous Air Pollutants (HAP) (includes HF)	0.17
Hydrogen Fluoride (HF)	0.10
Volatile Organic Compounds (VOC)	10.44
Nitric Acid	(0.02)
Hydrofluorocarbon (HFC)	8.05

Title V Program Applicability Basis

With the proposed changes associated with this modification, this facility maintains the potential to emit over 100 tons per year of criteria pollutants, over 10 tons per year of an individual HAP, and over 25 tons per year aggregate HAPs. Therefore, Chemours Washington Works is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

Legal and Factual Basis for Permit Conditions

The State and Federally-enforceable conditions of the Title V Operating Permits are based upon the requirements of the State of West Virginia Operating Permit Rule 45CSR30 for the purposes of Title V of the Federal Clean Air Act and the underlying applicable requirements in other state and federal rules.

The modifications to this facility have been found to be subject to the following applicable rules:

Federal and State:	45CSR7	To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes And Associated Operations
	45CSR13	Preconstruction permits for minor sources.
	45CSR30	Operating permit requirement.
State Only:	45CSR4	No objectionable odors.
	45CSR21	Control of Air Pollution From the Emission of Volatile Organic Compounds

Each State and Federally-enforceable condition of the Title V Operating Permit references the specific relevant requirements of 45CSR30 or the applicable requirement upon which it is based. Any condition of the Title V permit that is enforceable by the State but is not Federally-enforceable is identified in the Title V permit as such.

The Secretary's authority to require standards under 40 C.F.R. Part 60 (NSPS), 40 C.F.R. Part 61 (NESHAPs), and 40 C.F.R. Part 63 (NESHAPs MACT) is provided in West Virginia Code §§ 22-5-1 *et seq.*, 45CSR16, 45CSR34 and 45CSR30.

Active Permits/Consent Orders

The active permits/consent orders affected by this modification are as follows:

Permit or Consent Order Number	Date of Issuance	Permit Determinations or Amendments That Affect the Permit *(if any)*
R13-1953N	December 16, 2024	
R13-1353J	March 3, 2025	
R13-2365U	March 11, 2025	
R13-0815O	March 17, 2025	

Conditions from this facility's Rule 13 permit(s) governing construction-related specifications and timing requirements will not be included in the Title V Operating Permit but will remain independently enforceable under the applicable Rule 13 permit(s). All other conditions from this facility's Rule 13 permit(s) governing the source's operation and compliance have been incorporated into this Title V permit in accordance with the "General Requirement Comparison Table," which may be downloaded from DAQ's website.

Determinations and Justifications

Changes to C1 Area (MM13 - underlying NSR permit R13-2365U):

Emission Point ID C1NHE was added to the Emission Units table 1.1 in Section 1.0 of the permit.

Section 4.1 Table 4.1.1 Emission Limits were changed as shown below.

Emission Point ID	Emission Unit ID / Source Description	Control Device	Pollutant	Emission Limit	
				pph	tpy
C1FEE	C1FA (bin) C1FB (bin)	C1MI/C1MJ/ C1MIC (cyclone/bagfilter)	PM_{10}[1] HF	~~0.27~~1.18 ~~0.01~~0.02	~~0.83~~1.69 ~~0.02~~0.03
	C1FD (supply cylinder)	C1FEC (scrubber)			
	C1FE (reactor)				
	C1FH (reactor)				
	C1GN (cube conveyor: C1GN to C1FA & C1FB)	C1GNC1 (baghouse) C1GNC2 (baghouse)			
C1FFE	C1FF (bin)	N/A	$PM_{2.5}$ PM_{10} VOC	0.40 0.54 ~~0.12~~0.18	1.04 ~~0.83~~1.41 ~~0.18~~0.48
C1FGE	C1FG (bin)	N/A	$PM_{2.5}$ PM_{10} VOC	0.40 0.54 ~~0.12~~0.18	1.04 ~~0.83~~1.41 ~~0.18~~0.48

Emission Point ID	Emission Unit ID / Source Description	Control Device	Pollutant	Emission Limit	
				pph	tpy
~~C1NFE~~	~~Nitric Acid Tank~~	~~Scrubber~~	~~Nitric Acid~~	~~1.02~~	~~0.01~~
C1NGE	Product System	Condenser	~~HC~~HFC	~~0.7~~2.00	~~0.74~~8.76
C1PGE	Tank	Filter/Scrubber/Carbon Bed	VOC	0.56	2.46
			~~HC~~HFC	0.17	0.74
			Nitric Acid	0.03	0.11
			PM_{10}	0.01	0.02
C1PHE	Receiver	Filter Receiver	PM_{10}	0.05	0.19
~~C1PIE~~	~~Hopper~~	~~None~~	~~PM_{10}~~	~~0.08~~	~~0.32~~
~~C1PME~~	~~Hopper~~	~~None~~	~~PM_{10}~~	~~0.02~~	~~0.06~~

Emission Point ID	Emission Unit ID / Source Description	Control Device	Pollutant	Emission Limit	
				pph	tpy
C1PTE	Tank	None	VOC	~~4.6E-5~~6.1E-06	~~4.7E-5~~6.3E-06
			~~HC~~HFC	~~4.8E-3~~6.4E-04	~~4.9E-3~~6.6E-04
			Nitric Acid	~~8.0E-3~~6.7E-05	~~8.2E-3~~6.9E-05
			Ammonium Hydroxide	~~7.0E-6~~9.5E-07	~~7.2E-6~~9.7E-07
C1PLE	Process System	Filter	PM	1.0E-3	7.6E-4
C1PCE	Vacuum Pump	C1PCC Vacuum Pump	VOC	3.8E-3	1.7E-2
			~~HC~~HFC	~~7.7E-3~~0.02	~~3.4E-2~~0.07
			Nitric Acid	5.5E-5	2.4E-4
			PM_{10}	0.80	3.03
C1NFE	Tank	Scrubber	Nitric Acid	~~0.26~~0.002	~~7.8E-4~~5.8E-06
C1NPE	ACS Feed Tank	C1NPC Scrubber	VOC	0.57	3.71
C1NHE	Product System	None	VOC	0.02	5.3E-04

Emission point C1PCE was added to and C1PIE and C1PME were deleted from the citations for conditions 4.1.1, 4.1.6, and 4.1.7.

Emission Point C1NHE was added to Attachment B in Appendix A and Emission Points C1PIE, C1PKE, C1PJE, C1PME, and C1QBE were deleted from Attachment B.

Emission Point C1NHE was added to Appendix A Attachment C for VOC monitoring.

Emission Points C1PIE and C1PME were deleted from Appendix A Attachment C for PM_{10} monitoring and Emission point C1PCE was added.

Emission Points C1FFE and C1FGE were added to Appendix A Attachment C for $PM_{2.5}$ monitoring.

Emission Point C1NFE was deleted from Appendix A Attachment C for Nitric Acid monitoring.

Changes to C2 Area (MM11 - underlying NSR permit R13-1953N):

In Table 5.1.2. the VOC limit for Emission Point C2EBE was changed from 0.03 tpy to 0.24 tpy.

In Table 5.1.3. the HF limit for Emission Point C2DHE was changed from 0.01 tpy to 0.10 tpy.

In Table 5.1.4 the HAP limit for Emission Point C2DHE was changed from 0.06 tpy to 0.10 tpy.

Changes to T5 Area (MM12 - underlying NSR permit R13-1353J):

In the Emission Units table 1.1, the Area Emission Points were removed from T5HC, T5HD, and T5HN. T5HDE was added as an emission point for T5HN.

In the Emission Units table 1.1, added Emission Points T5HCE and Area for T5HI.

In the Emission Units table 1.1, added Emission Point T5HCE for T5HT, T5HU, and T5HV.

In Table 8.1.1., limits for Acetonitrile were added to T5HN(Area Emissions). These limits were voluntarily requested by the applicant although they are very low limits.

In Table 8.1.1, T5HC & T5HD (Area Emissions) were removed along with the limits.

In Table 8.1.1, Emission Points were changed as shown in red below:

Emission Point ID	Source ID (Description)	Control Device	Pollutant	Emission Limit	
				pph	tpy
T5HCE	T5HC (#4 Polykettle) T5HN (Raw Material System) T5HW (#4 Tank) T5HP (Raw Material Tank) T5HT (#1 Tank) T5HU (#2 Tank) T5HV (#3 Tank)	None	ODC VOC HAP	0.8 17.10 0.01	0.15 ~~3.30~~7.07 7.50E-3

Emission Point ID	Source ID (Description)	Control Device	Pollutant	Emission Limit	
				pph	tpy
T5HCE2	T5HC (#4 Polykettle)	None	ODC VOC HAP	0.7 152.0 0.01	0.01 1.33 7.50E-3

Emission Point ID	Source ID (Description)	Control Device	Pollutant	Emission Limit	
				pph	tpy
T5HDE	T5HD (#5 Polykettle) T5HX (#5 Tank) T5HT (#1 Tank) T5HU (#2 Tank) T5HV (#3 Tank) T5HP (Raw Material Tank)	None	ODC VOC HAP	0.78 32.30 0.01	0.15 ~~3.30~~7.07 4.00E-4
T5HDE2	T5HD (#5 Polykettle)	None	ODC VOC HAP	0.7 152.0 0.01	0.01 1.33 7.50E-3

Section 8.1.6 was changed to Reserved. The acetonitrile limits were added to Table 8.1.1.

Changes to T6 Area (MM14 - underlying NSR permit R13-0815O):

Section 9.1.5 Area T6PI (Feed System) VOC limits were increased from 17.86 pph to 35.50 pph and 1.09 tpy to 1.40 tpy.

Section 9.1.5 annual VOC limit for Emission Point T6IUE was increased from 18.42 tpy to 20.20 tpy.

Non-Applicability Determinations
None

Request for Variances or Alternatives
None

Insignificant Activities
Insignificant emission unit(s) and activities are identified in the Title V application.

Comment Period
Beginning Date: Not Applicable
Ending Date: N/A

Point of Contact
All written comments should be addressed to the following individual and office:

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Procedure for Requesting Public Hearing

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Secretary shall grant such a request for a hearing if he/she concludes that a public hearing is appropriate. Any public hearing shall be held in the general area in which the facility is located.

Response to Comments (Statement of Basis)

Not applicable.