



west virginia department of environmental protection

Division of Air Quality
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Harold D. Ward, Cabinet Secretary
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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-1849Q
Plant ID No.: 107-00001
Applicant: DuPont Specialty Products USA, LLC
Facility Name: Washington Works
Location: 8480 DuPont Road, Bldg 24 Washington, Wood County, WV
NAICS Code: 326211; 325220
Application Type: Modification
Received Date: May 5, 2023
Engineer Assigned: Jonathan Carney, P.E.
Fee Amount: \$3,500.00
Date Received: May 12, 2023
Complete Date: June 2, 2023
Due Date: August 22, 2023
Applicant Ad Date: May 10, 2023
Newspaper: *The Parkersburg News and Sentinel*
UTMs: Easting: 4,346.800 km Northing: 442.103 Zone: 17

DESCRIPTION OF PROCESS

Acetal Resin – Process Description

The polymerization of Acetal resin polymer starts with the purification of the formaldehyde using extraction and distillation columns. Then further purified using a pyrolyzer.

The purified formaldehyde is polymerized and the process also has a solvent recovery system. The polymer and solvent slurry mixture produced in the polymerizer during normal operation is fed to a separation device that isolates the solids and drops them into a conveyor/dryer system. The solids have most of the residual solvent removed in this system and they are then placed into a set of intermediate storage bins. These bins feed an air conveying system that transports the intermediate polymer (raw fluff) to a reactor processing vessel that “caps” the polymer chains. The off gas stream from the capping reactor is sent through a series of condensers to recover the capping reagent and evolved formaldehyde for further purification and re-use.

The formaldehyde recovered is sent to other parts of the process for concentration and recycled back to the feed tank of the initial extraction process.

The capped polymer exits from the capping reactor and is sparged with inert gas to reduce the residual reactants present on the polymer. Upon exiting the sparger the finished product is ready for either conversion to another form or for direct sale or transfer to other processors.

This is also the point of definition for the final product for the current Acetal MACT [40 CFR 63 Subpart YY]. This permit corresponds to the section of the plant covered by the Acetal MACT.

The Acetal Resins Production process uses a high degree of emissions control. The waste off-gas (WOG) is collected in a header and routed to the primary control device which is the comparable fuels boiler (CFB), control device DOMC. The process vents are alternatively vented to the flare (HZZC). These control devices satisfy the Acetal MACT closed vent system requirements.

Purpose of Application

- 1) Correct errors in number of allowable capper maintenance jet events for sources GZZ1 and GZZ2 at emissions point DEME; correct emissions at DEME to better reflect current conditions; and correct scrubber liquor flow rate at associated emergency control device DEM-OH.
- 2) Add emergency flare (DNFFF) for emission sources DMH and DMI, specify short-term monitoring period for Table,
- 3) Specify monitoring period for short-term limitations in Table 4.1.1 and
- 4) Administrative updates to eliminate references to comparable fuel regulations (40CFR261.38) and to a condition to section 4.1.12 found in the Title V permit.

SITE INSPECTION

The last inspection of this facility was performed on September 20, 2019 by Becky Johnson from Compliance and Enforcement. The facility was found to be in compliance.

Directions: From Interstate 77, take exit for Rt-95/Camden Avenue, proceed west until intersection with Rt-14 then turn right (north). After about ¼ mile turn left onto Corridor D Bypass entrance. Follow the bypass to the exit just before the bridge. Turn left (south) onto DuPont Rd., Rt-892. Proceed approximately 1 mile to facility on right.

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ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Overall estimated increases in emissions -

Pollutant	TPY
Carbon Monoxide (CO)	0.34
Nitrogen Oxides (NO _x)	0.11
Particulate Matter	0.01
Sulfur Dioxide	0.01
Volatile Organic Compounds	0.63

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Changes in emissions For Emission Points

Emission Point	Pollutant		
		Lbs/hr	TPY
DNTFFE	PM	0.01	0.01
	VOCs	0.17	0.72
	NOx	0.03	0.11
	SO2	0.01	0.01
	CO	0.08	0.34
DEME	VOCs	-4.00	-0.09
	HAPs	2.07	2.21
	CH2O	0.03	0.00
	Hexane	-1.50	-0.02
	Toluene	-0.22	0.00

REGULATORY APPLICABILITY

45CSR6 Control of Air Pollution From Combustion of Refuse - 45CSR6 prohibits open burning, establishes emission limitations for particulate matter, and establishes opacity requirements. Sources subject to 45CSR6 include completion combustion devices, enclosed combustion devices, and flares.

All flares are subject to the particulate matter weight emission standard set forth in §45-6-4.1; the opacity requirements in §§45-6-4-3 and 4-4; the visible emission standard in §45-6-4.5; the odor standard in §45-6-4.6; and, the testing standard in §§45-6-7.1 and 7.2.

The flare emissions limit was calculated to be 74.3 lb/hr using the formula in 45CSR6-4.1 and a maximum incinerator capacity of 54,592 lb/hr. The estimated PM emissions is 0.01 lb/hr which is less than 74.3 lb/hr. The PM emissions are from the pilot flame emissions that are to be in continuous operation when maintenance is not being performed on the flare.

45CSR13 - Permits for construction, modification, relocation and operations of stationary sources of air pollutants, notification requirements, administrative updates, temporary permits, general permits, permission to commend constructions, and procedures for evaluation –

This Modification is to 1)Correct errors in number of allowable capper maintenance jet events for sources GZZ1 and GZZ2 at emissions point DEME; correct emissions at DEME to better reflect current conditions; and correct scrubber liquor flow rate at associated emergency control device DEM-OH. 2)Add emergency flare (DNTFF) for emission sources DMH and DMI, specify short-term monitoring period for Table,

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3) Specify monitoring period for short-term limitations in Table 4.1.1 and 4) Administrative updates to eliminate references to comparable fuel regulations (40CFR261.38) and to a condition to section 4.1.12 found in the Title V permit.

This application qualifies for a Modification. The applicant has published notice of the changes as required and submitted the appropriate fees for a Modification.

45CSR30 Requirements for operating permits –

This rule establishes a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The effective date of the current Title V permit for this facility is June 19, 2023 and does not expire until June 5, 2023. Proposed changes evaluated herein must also be incorporated into the facility’s Title V operating permit. Commencement of the operations authorized by this permit shall be determined by the appropriate timing limitations associated with Title V permit revisions per 45CSR30.

40CFR 261.38 Comparable Fuels Exemption – This rule has been changed to reserved (vacated) and the requirements in the permit that referred to this rule have been changed to reserved accordingly.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There are no new pollutants requiring a toxicity review being added to this Permit as a result of this Modification.

CHANGES TO PERMIT R13-1849Q

1.0 Emission Units table changed to include emergency flare DNTFF.

2.12 Emergency section was changed to Reserved. The emergency affirmative defense sections of the permit were derived from state regulations (45CSR30) as reasonable conditions in the New Source Review permit. Since, the emergency affirmative defense sections of 45CSR30 have been removed from 45CSR30 to align with changes in federal regulations, the conditions in Section 2.12 are no longer considered reasonable conditions.

Table 4.1.1. was changed to include emission limits for the new emission point flare, DNTFFE, as follows:

DNTFFE	PM	0.01	0.01
	VOC	0.17	0.72
	NO _x	0.03	0.11
	SO ₂	0.01	0.01
	CO	0.08	0.34

These are the emissions from the flare pilot flames.

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Table 4.1.1. was changed to revise the emission limits for emission point DEME as follows:

DEME	VOC	31.9627.96	0.720.63
	Formaldehyde	1.311.34	0.03
	Hexane	1.510.01	0.030.01
	Toluene	0.610.39	0.01
	THAP	3.431.74	0.080.04

4.1.8.2. was revised making the original flare requirement section 4.1.8.2.1 and noting that it is applicable to emission point HZZC. Section 4.1.8.2.2 was added as State-Only Enforceable Requirement for the new flare, emission point DNTFF.

4.1.11 section was changed to Reserved. This is in accordance with the referenced rule 40CFR§261.38 which has been vacated and changed to Reserved.

4.1.12. was changed to include the sentence ‘The minimum temperature for the Comparable Fuels Boiler (DOMC) is 1,562 °F (850 °C) when combusting waste off gas without hazardous waste.’

4.1.15. was changed to specify capper events for emission units GZZ1 and GZZ2 and increase the annual maximum capper events from 36 to 45 events per capper DPH and capper DPL respectively. Increasing these events results in only a slight increase in emissions because the applicant claims the number of capper events were changed unexpectedly and the more capper events were used in the original calculation.

4.2.7. was changed to include 4.2.7.1 as it applies to flares subject to 40 CFR 63 Subpart SS and to include 4.2.7.2. for flares subject to 4.1.8.2.2.

4.3.8. was changed to reserved because the referenced 40CFR§261.38 has been vacated and changed to Reserved.

4.4.18 was changed to include 4.4.18.1.1. for flares subject to 40 CFR 63 Subpart SS and to make some corrections. 4.4.18.1.2 was added to include recordkeeping pilot flame status as required by section 4.2.7.2.

4.4.22. was updated to require recordkeeping of the number of capper maintenance events per capper emission units in alignment with section 4.1.15.

APPENDIX A (Parametric Monitoring) was updated to include the new flare monitoring parameters.

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APPENDIX A (Parametric Monitoring) was updated to include changes to DEM-OH. The scrubber flow rate parameters was changed to >35 gpm when GZZ1 and GZZ2 of the emission unit is in operation. The averaging period was changed to 3-hour similar to the other flow rates. The maximum flow rate limit was counterintuitive so long as the scrubber does not become flooded. The applicant believes that due to physical limits on the water supply line to the scrubber that flooding is not possible and allowing the flow rate greater than 35 gpm will improve abatement of emissions in that it will allow the flow to be slightly greater than 50 gpm at times.

RECOMMENDATION TO DIRECTOR

It is the recommendation of the writer that this Modification of Permit R13-1849Q be granted to DuPont Specialty Products USA, LLC, Washington Works located in Washington, Wood County, WV.

Jonathan Carney

July 17, 2023

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