

# Fact Sheet



## *For Draft/Proposed Renewal Permitting Action Under 45CSR30 and Title V of the Clean Air Act*

Permit Number: **R30-07300003-2010**  
Application Received: **April 15, 2010**  
Plant Identification Number: **07300003**  
Permittee: **CYTEC Industries Inc.**  
Facility Name: **Willow Island Plant**  
Manufacturing Unit: **Polymer Additives (Part 4 of 4)**  
Mailing Address: **1 Heilman Avenue, Willow Island, WV 26134-9801**

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Physical Location: Willow Island, Pleasants County, West Virginia  
UTM Coordinates: 474.00 km Easting • 4,356.00 km Northing • Zone 17  
Directions: From Interstate 77, Exit 179, take State Route 2 north for approximately 10 miles. Plant site is on the left (river side) of State Route 2, two miles south of Belmont, WV.

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### **Facility Description**

CYTEC Industries is a global, research-based specialty chemical company. The company operates a multi-product, multi-process chemical plant at Willow Island, WV. Plant operations are divided into the following three manufacturing units and one support services unit: Urethane Chemicals (Part 1 of 4), Surfactants (Part 2 of 4), Site Services (Part 3 of 4), and Polymer Additives (Part 4 of 4). The initial Title V Permit was divided into five parts, but the Criterion Catalyst Manufacturing Unit was sold and there are now only four parts.

The Polymer Additives Manufacturing Unit manufactures ultraviolet light absorbers, antioxidants and anti-static agents. The light absorbers are used in all types of plastics (bottles, telephones, lawn furniture, auto parts), in coatings, and in sunscreens. Antioxidants are used in man-made fibers, rubber products, plastics, and in medical applications. Anti-static agents are used in the electronics industry, in copy machine toner, and in textile applications.

## Emissions Summary

<b>Plantwide Emissions Summary [Tons per Year]</b>		
<b>Regulated Pollutants</b>	<b>Potential Emissions</b>	<b>2008 Actual Emissions</b>
Carbon Monoxide (CO)	80.75	35.21
Nitrogen Oxides (NO <sub>x</sub> )	92.52	22.91
Lead (Pb)	--	--
Particulate Matter (PM <sub>2.5</sub> )	21.36	4.41
Particulate Matter (PM <sub>10</sub> )	21.36	4.41
Total Particulate Matter (TSP)	22.65	4.68
Sulfur Dioxide (SO <sub>2</sub> )	42.15	0.03
Volatile Organic Compounds (VOC)	310.39	132.93
<i>PM<sub>10</sub> is a component of TSP.</i>		
<b>Hazardous Air Pollutants</b>	<b>Potential Emissions</b>	<b>2008 Actual Emissions</b>
Acetaldehyde	0.01	0.0002
Acetonitrile	0.10	0.04
Acrylic Acid	0.05	0.021
Benzene	0.37	0.007
Benzotrichloride	0.13	0.06
Bis (Chloromethyl) Ether	0.01	--
Chloroform	0.03	0.01
Dimethyl Formamide	2.05	1.30
Ethylbenzene	0.35	0.143
Formaldehyde	0.47	0.058
Hexane	1.91	0.70
Hydrochloric Acid	0.07	0.048
Hydroquinone	0.01	--
Maleic Anhydride	0.87	0.071
Methanol	62.96	37.639
Methylene Chloride	0.13	0.05
Methyl Isobutyl Ketone	84.43	33.43
2,4 Toluene Diisocyanate	0.01	0.0003
Toluene	61.86	25.53
Triethylamine	19.23	7.80
Xylenes (isomers and mixtures)	0.75	0.32

*Some of the above HAPs may be counted as PM or VOCs.*

### Title V Program Applicability Basis

Due to the facility-wide potential to emit over 100 tons per year of VOC, over 10 tons per year of a single hazardous air pollutant (HAP), and over 25 tons per year of aggregate hazardous air pollutants (HAPs), CYTEC Industries Inc. 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.

This facility has been found to be subject to the following applicable rules:

Federal and State:	45CSR6	Open burning prohibited.
	45CSR7	Particulate matter and opacity limits for manufacturing sources.
	45CSR11	Standby plans for emergency episodes.
	45CSR13	Preconstruction permits for minor sources.
	WV Code § 22-5-4 (a) (14)	The Secretary can request any pertinent information such as annual emission inventory reporting.
	45CSR16	Standards of Performance for New Stationary Sources pursuant to 40 C.F.R. Part 60.
	45CSR30	Operating permit requirement.
	45CSR34	Emission Standards for Hazardous Air Pollutants.
	45CSR42	Greenhouse Gas Reporting
	40 C.F.R. 60, Subpart Kb	Volatile organic liquid storage tanks constructed, reconstructed, or modified after July 23, 1984.
	40 C.F.R. Part 61	Asbestos inspection and removal
	40 C.F.R. 63, Subpart FFFF	Miscellaneous Organic Chemical Manufacturing (MON) MACT.
	40 C.F.R. Part 63, Subpart EEEE	Organic Liquids Distribution (OLD) MACT.
	40 C.F.R. Part 82, Subpart F	Ozone depleting substances
	40 C.F.R. Part 98	Mandatory Greenhouse Gas Reporting
State Only:	45CSR4	No objectionable odors.

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

Permit or Consent Order Number	Date of Issuance	Permit Determinations or Amendments That Affect the Permit (if any)
R13-2156L	March 9, 2010	None

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 B," which may be downloaded from DAQ's website.

**Determinations and Justifications**

The initial Title V Permit for R30-07300003-2002 (Part 4 of 5) was issued on December 5, 2005. Since then, the Title V permit has been modified as follows:

**R13 Administrative Updates/Title V Minor Modifications/ Title V Significant Modifications**

Permit Modification	Date Issued	Summary of Description of Changes
MM01	June 13, 2006	Incorporated changes from R13-2156D; updated compliance date for 40 C.F.R. 63, Subpart FFFF; and revised 40 C.F.R. 63, Subpart EEEE requirements.
MM02	October 17, 2006	Incorporated changes from R13-2156E.
MM03	May 17, 2007	Incorporated changes from R13-2156F; and changed the requirement for quarterly R13 permit updates to semi-annually.
MM04	December 17, 2007	Incorporated changes from R13-2156G; and replaced the 40 C.F.R. 63, Subpart EEEE placeholder language with the applicable recordkeeping requirements for 40 C.F.R. 63, Subpart EEEE.
MM05	April 15, 2008	Incorporated changes from R13-2156H.
MM06	November 13, 2008	Incorporated changes from R13-2156I.
SM01	July 7, 2009	Incorporated changes from R13-2156J; and incorporated applicable requirements from 40 C.F.R. 63, Subpart FFFF.
MM07	December 7, 2009	Incorporated changes from R13-2156K; and revised a typo in the 40 C.F.R. 63, Subpart FFFF control efficiency requirements for batch process vents.

In addition to the changes listed in the table above, CYTEC also submitted a Title V minor modification, R30-07300003-2002 (Part 4 of 5) – MM08, to incorporate changes approved under R13-2156L. R13-2156L is a Class I administrative update, issued on March 9, 2010, which updated the R13 permit with changes made to Polymer Additives during the 2<sup>nd</sup> Half of 2009. Those changes approved under R13-2156L and requested in the Title V minor modification application R30-07300003-2002 (Part 4 of 5) – MM08 were included in this Title V permit renewal and will not be issued in a separate Title V minor modification permit. The revisions to the Title V permit to incorporate the R13-2156L changes include the following:

**R13-2156L and R30-07300003-2002 (Part 4 of 5) – MM08 Changes**

Permit Section	Revisions
1.0	Additions, deletions, and edits due to minor equipment changes in the Emission Units Table 1.1.
2.0	No Changes
3.0	No Changes
4.0	The 45CSR7 Sources Emission Limits Table in Condition 4.1.4 of the Title V Permit (Condition 4.1.6 of R13-2156L) was revised based upon minor equipment changes made to Polymer Additives  Removed Emission Units 22MX and 23BX from the Intermittent Use Equipment Table in Condition 4.1.14 of the Title V Permit (Condition 4.1.17 of R13-2156L) and added them to the Emission Units Table in Section 1.1 of the Title V Permit (Section 1.0 in R13-2156L).
Appendix A	Added 40 C.F.R. 63, Subpart FFFF to the Applicable Regulations for Control Devices 041C and 041S; also removed Emission Group UV2908 from the listing for Control Device 06VC and added Emission Group CA150 to the listing for Control Device 22QC based upon minor equipment changes made to Polymer Additives.
Appendix B	No Changes
Appendix C	No changes in R13-2156L, but removed in the Title V permit because R13-2156L does not refer to its use.

The following table provides a listing of each condition from the initial Title V permit and Title V permit renewal that has been added, removed, or renumbered.

R30-07300003-2002 (4 of 5)–MM07 Permit Condition No.	R30-07300003-2010 (4 of 4) Permit Condition No.	Description of Change
3.1.9	4.1.16	Moved requirement
3.1.10	4.1.17	Moved requirement
None	3.1.10	This condition was in the 45CSR13 permit, but was not included in the initial Title V permit.
3.4.4	4.4.11	Moved requirement
3.4.5	4.4.12	Moved requirement
None	3.4.4	New applicable requirement 40 C.F.R. 98
3.5.10	3.5.11	Renumbered
None	3.1.9, 3.5.10	New applicable requirements for 45 C.S.R. 42
None	3.5.12	New applicable requirement for 40 C.F.R. 98
4.1.3	None	This was a “reserved” section which has been removed.
4.1.4	None	This was a “reserved” section which has been removed.
4.1.5	4.1.3	Renumbered
4.1.6	4.1.4	Renumbered
4.1.7	4.1.5	Renumbered
4.1.8	4.1.6	Renumbered
4.1.9	4.1.7	Renumbered
4.1.10	None	This was a “reserved” section which has been removed.
4.1.11	4.1.8	Renumbered
4.1.12	4.1.9	Renumbered
4.1.13	4.1.10	Renumbered

<b>R30-07300003-2002 (4 of 5)–MM07 Permit Condition No.</b>	<b>R30-07300003-2010 (4 of 4) Permit Condition No.</b>	<b>Description of Change</b>
4.1.14	4.1.11	Renumbered
4.1.15	4.1.12	Renumbered
4.1.16	4.1.14	Renumbered
4.1.17	4.1.15	Renumbered
4.1.18	4.1.13	Renumbered
4.3.1	None	This was a “reserved” section which has been removed.
4.3.2	4.3.1	Renumbered
4.3.3	4.3.2	Renumbered
4.5.2	None	This was a “reserved” section which has been removed.
4.5.3	4.5.2	Renumbered
4.5.4.	4.5.3	Renumbered
4.5.5	4.5.4	Renumbered
4.5.6	4.5.5	Renumbered

**40 C.F.R. 64 - Compliance Assurance Monitoring (CAM)**

According to 40 C.F.R. §64.2(a), CAM applies to a pollutant-specific emissions unit at a major source that is required to obtain a part 70 or 71 permit if the unit satisfies all of the following criteria: 1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under 40 C.F.R. §64.2(b)(1); 2) The unit uses a control device to achieve compliance with any such emission limitation or standard; and 3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. 40 C.F.R. §64.2(b)(1)(i) exempts emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the Act; and 40 C.F.R. §64.2(b)(1)(vi) exempts emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method.

CYTEC conducted a review of their applicability to 40 C.F.R. 64 – “Compliance Assurance Monitoring” (CAM) for Polymer Additives. Based on the information submitted, CYTEC determined that none of their emission units and control devices are subject to CAM.

The vapor returns (075C, 20KC, 05VC, 06VC, 08VC, 10VC, 11VC, 14VC, 16VC, 17VC, 18VC) act as passive control measures and are not included in the 40 C.F.R. §64.1 definition for a control device; therefore, none of the emission units they control emissions from are subject to the requirements of CAM.

HCl Storage Tanks 041X and 051X use Scrubbers 041C and 041S to control HCl emissions. Since the HCl storage tanks and the associated scrubbers are subject to the requirements of 40 C.F.R. 63, Subpart FFFF for HCl emissions, they are exempt from the requirements of CAM, per 40 C.F.R. §64.2(b)(1)(i).

Scrubbers 11MV, 11MW, 11MX, 11MY, and 11MZ are used to control HAP and VOC emissions from emission sources 074X, 102X, 103X, 111X, 112X, 121A, 144X, 153X, 154X, 162X, 163X. These emission sources are subject to the MON requirements of 40 C.F.R. 63, Subpart FFFF for their HAP emissions; and the scrubbers which are used to demonstrate compliance with these emission limitations are subject to the control device requirements under 40 C.F.R. 63, Subpart FFFF. Also, Scrubbers 11MV, 11MW, 11MX, 11MY, and 11MZ had a continuous compliance determination method specified in the initial Title V permit. Since Scrubbers 11MV, 11MW, 11MX, 11MY, and 11MZ are subject to the requirements of 40 C.F.R. 63, Subpart FFFF and had continuous compliance determination methods specified in the initial Title V permit, they are not subject to the additional monitoring requirements of CAM, as specified under 40 C.F.R. §§64.2(b)(1)(i) and (b)(1)(vi).

Baghouses 08RC, 22QC, 13JC, and 23AC are used to control particulate matter emissions from various pieces of process equipment (08RC – 08RX, 10TX, DRUM08; 22QC – 21AY, 21WX, 22BX, 22DX, 23AX, 25EX, 15EY, 22GX, DRUM22; 13JC – 13JX, 13NX, 13HY, 15BX, 15EY, 16ZX, DRUM13; 23AC – DRUM23, 21AY). Since the emission units these baghouses control particulate emissions from do not have potential pre-control device emissions of particulate matter greater than 100 tons per year, these control devices are not subject to CAM.

Scrubbers 07CC, 05KC, and 05MC control particulate matter and/or HCl emissions from emission units 07AX, 05LX, and 06NX (07CC – 07AX; 05KC – 05LX, 06NX; 05MC – 05LX). Since the emission units these scrubbers control particulate and HCl emissions from do not have the potential pre-control device emissions of particulate matter greater than 100 tons per year or HCl emission greater than 10 tons per year, these scrubbers are not subject to CAM. Also, it should be noted that if the emissions from these sources did exceed major source thresholds, these control devices would still not be subject to CAM per 40 C.F.R. §64.2(b)(1)(vi) because continuous compliance determination methods were specified in the initial Title V permit.

### **Non-Applicability Determinations**

The following requirements have been determined not to be applicable to the subject facility due to the following:

- a. 40 C.F.R. 60, Subpart K – “Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978.” There are no petroleum liquid storage tanks in the Polymer Additives manufacturing unit.
- b. 40 C.F.R. 60, Subpart Ka – “Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 19, 1978, and Prior to July 23, 1984.” There are no petroleum liquid storage tanks in the Polymer Additives manufacturing unit.
- c. 40 C.F.R. 60, Subparts VV, III, NNN, and RRR – “Standards of Performance for Volatile Organic Compound (VOC) Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Processes.” The equipment subject to this permit is not a SOCMI “affected facility,” because such equipment is not assembled to produce any chemical defined as a SOCMI chemical.
- d. 40 C.F.R. 60, Subpart DDD – “Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Polymer Manufacturing Industry.” The Polymer Additives manufacturing unit does not manufacture polypropylene, polyethylene, polystyrene, or poly(ethylene terephthalate) for which this rule applies.
- e. 40 C.F.R. 61, Subpart V – “National Emission Standards for Equipment Leaks (Fugitive Emissions Sources).” Applies to sources in VHAP service as defined in 40 C.F.R. §61.241. VHAP service involves chemicals that are not used in a manner that qualifies them under the rule in the Polymer Additives manufacturing unit.
- f. 40 C.F.R. 63, Subpart D, F, and G – “National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry (HON).” The equipment subject to this permit is not an “affected facility,” because such equipment does not manufacture as a primary product any chemical listed in Table 1 of Subpart F.
- g. 40 C.F.R. 63, Subpart DD – “National Emission Standards for Hazardous Air Pollutants From Off-Site Waste and Recovery Operations.” The Polymer Additives manufacturing unit does not receive off-site materials as specified in paragraph 40 C.F.R. §63.680(b) and the operations are not one of the waste management operations or recovery operations as specified in 40 C.F.R. §§63.680(a)(2)(i) through (a)(2)(vi).

- h. 40 C.F.R. 63, Subpart JJJ – “National Emission Standards for Hazardous Air Pollutant Emissions: Group IV Polymers and Resins.” The Polymer Additives manufacturing unit does not produce the materials listed in 40 C.F.R. §63.1310.
- i. 40 C.F.R. 63, Subpart PPPP – “National Emission Standards for Hazardous Air Pollutants: Surface Coating of Plastic Parts and Products.” The Polymer Additives manufacturing unit does not produce an intermediate or final product that meets the definition of “surface coated” plastic part.
- j. 40 C.F.R. 63, Subpart WWWW – “National Emission Standards for Hazardous Air Pollutants: Reinforced Plastic Composites Production.” The Polymer Additives manufacturing unit does not engage in reinforced plastics composites production as defined in 40 C.F.R. §63.5785 and does not manufacture composite material as defined in 40 C.F.R. §63.5935.
- k. 40 C.F.R. 63, Subpart DDDDD – “National Emission Standards for Hazardous Air Pollutants: Industrial/Commercial/Institutional Boilers and Process Heaters.” The Polymer Additives manufacturing unit does not own or operate an industrial, commercial, or institutional boiler or process heater as defined in 40 C.F.R. §63.7575 ( for both the standard that was vacated and remanded on June 19, 2007 and the standard proposed on June 4, 2010).
- l. 40 C.F.R. 64 – “Compliance Assurance Monitoring.” The Polymer Additives manufacturing unit is not subject to the requirements of 40 C.F.R. 64 because the potential pre-control device emissions for each pollutant-specific emissions unit are less than major source levels; or the pollutant-specific emissions unit is subject to an exempt emission limitation or standard per 40 C.F.R. §64.2(b)(1)(i); or the Title V permit already specified a continuous compliance determination method per 40 C.F.R. §64.1(b)(1)(vi) for the emission limitation or standard. Note that vapor return lines are a passive control measure, and therefore are not a control device as defined in the CAM rule under 40 C.F.R. §64.1.
- m. 45CSR2 – “To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers.” The Polymer Additives manufacturing unit does not contain any fuel burning units.
- n. 45CSR10 – “To Prevent and Control Air Pollution from the Emission of Sulfur Oxides.” The Polymer Additives manufacturing unit does not have emission sources of sulfur oxides subject to this rule.
- o. 45CSR17 – To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage and Other Sources of Fugitive Particulate Matter.” Per 45CSR§17-6.1, the Polymer Additives manufacturing unit is not subject to 45CSR17 because it is subject to the fugitive particulate matter emission requirements of 45CSR7.
- p. 40 C.F.R. 60, Subpart Kb – “Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984.” 40 C.F.R. 60, Subpart Kb applies to each storage vessel with a capacity greater than or equal to 75 m<sup>3</sup> that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. Tanks 021X, 074X, 075X, 076X, and 173X store volatile organic liquids and were constructed after July 23, 1984, but are not subject to 40 C.F.R. 60, Subpart Kb because they have a capacity of less than 75 m<sup>3</sup>. Storage tanks 063X, 225X and 233X were constructed after July 23, 1984, but do not store volatile organic liquids.
- q. 45CSR27 – “To Prevent and Control the Emissions of Toxic Air Pollutants.” Since the potential emissions of formaldehyde to the atmosphere from all sources (point, fugitive, and secondary) at CYTEC’s Willow Island Plant are now less than 1,000 lb/year of formaldehyde, the emission units are no longer subject to the BAT requirements under 45CSR27, per section 45CSR§27-3.1. Also, per 45CSR§27-3.1, emission units within the Polymer Additives Manufacturing Unit that emit formaldehyde would no longer be subject to the BAT requirements of 45CSR27 because they are now subject to the requirements of 40 C.F.R. 63, Subpart FFFF. The potential air emissions from all sources (point, fugitive, and secondary) at CYTEC’s Willow Island Plant, of all toxic air pollutants listed in Table A of 45CSR27 are less than the amounts shown in Table A.

### **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: July 14, 2010

Ending Date: August 13, 2010

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

Carrie McCumbers  
Title V Permit Writer  
West Virginia Department of Environmental Protection  
Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

### **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.

### **Point of Contact**

Carrie McCumbers  
West Virginia Department of Environmental Protection  
Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304  
Phone: 304/926-0499 ext. 1226 • Fax: 304/926-0478

### **Response to Comments (Statement of Basis)**

Not applicable.