

Commonwealth of Kentucky  
Division for Air Quality  
***STATEMENT OF BASIS / SUMMARY***

Title V, Operating  
Permit: V-21-013 R1

Polyair Packaging  
300 Spencer Mattingly Lane  
Bardstown, KY 40004

January 15, 2025  
Johnson Luma, Reviewer

SOURCE ID:	21-179-00050
AGENCY INTEREST:	39476
ACTIVITY:	APE20240002

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## SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 2671, Packaging Paper and Plastics Film, Coated and Laminated

Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☒ Yes ☐ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: Nelson

Nonattainment Area ☒ N/A ☐ PM<sub>10</sub> ☐ PM<sub>2.5</sub> ☐ CO ☐ NO<sub>x</sub> ☐ SO<sub>2</sub> ☐ Ozone ☐ Lead  
If yes, list Classification: N/A

PTE\* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No  
If yes, for what pollutant(s)?  
☐ PM<sub>10</sub> ☐ PM<sub>2.5</sub> ☐ CO ☐ NO<sub>x</sub> ☐ SO<sub>2</sub> ☒ VOC

PTE\* greater than 250 tpy for any criteria air pollutant ☒ Yes ☐ No  
If yes, for what pollutant(s)?  
☐ PM<sub>10</sub> ☐ PM<sub>2.5</sub> ☐ CO ☐ NO<sub>x</sub> ☐ SO<sub>2</sub> ☒ VOC

PTE\* greater than 10 tpy for any single hazardous air pollutant (HAP) ☐ Yes ☒ No  
If yes, list which pollutant(s): N/A

PTE\* greater than 25 tpy for combined HAP ☐ Yes ☒ No

\*PTE does not include self-imposed emission limitations.

### Description of Facility:

Polyair Packaging (Polyair) produces thin sheets of polyethylene foam. Pellets of low density polyethylene (LDPE) are melted and injected with isobutane, propane, or a mixture thereof as a blowing agent, then extruded into long, thin sheets. Rolls of foam are stored in the curing room for several weeks and then processed into final products.

## SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: V-21-013 R1

Activities: APE20240002

Received: December 12, 2024

Application Complete Date(s): January 14, 2025

Permit Action: ☐ Initial ☐ Renewal ☐ Significant Rev ☒ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒ Yes ☐ No NSR Applicable? ☐ Yes ☒ No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☒ Yes ☐ No

### Description of Action:

APE20240002 (Revision 1) - The application received December 12, 2024 was to add the following emissions units to the permit which were discovered during an audit:

- A previously installed Makeup Air Handling Unit (MAU #1, (indirect-fired heat exchanger, 3.51 MMBtu/hr))
- Ten (10) previously installed heaters each less than 1 MMBtu/hr and one (1) Makeup Air Unit (MAU #2) rated at 0.702 MMBtu/hr, which can all be considered as insignificant activities.

APE20240001 (Off-Permit Change):

- The Division received a request from Polyair Corporation's on March 27, 2024 to conduct a trial to reduce current VOC emissions using CO<sub>2</sub> as a blowing agent. The trial was planned to be completed by the end of Quarter 4, 2024. The Division has determined that this addition can be covered per 401 KAR 52:020, Section 17, Off-Permit Changes, and that Polyair Corporation may proceed with the project as described within their requests.

APE20230001 (Off-Permit Change):

- The Division received a request from Polyair Corporation's on March 10, 2023 to conduct a trial to reduce current VOC emissions using CO<sub>2</sub> as a blowing agent. The trial was planned to be completed by the end of Quarter 4, 2023. The Division has determined that this addition can be covered per 401 KAR 52:020, Section 17, Off-Permit Changes, and that Polyair Corporation may proceed with the project as described within their requests.

APE20220001 (Off-Permit Change):

- The Division received a request from Polyair Corporation's on October 26, 2022 to conduct a trial to reduce current VOC emissions using CO<sub>2</sub> as a blowing agent. The trial was planned to be completed by the end of Quarter 1, 2023. The Division has determined that this addition can be covered per 401 KAR 52:020, Section 17, Off-Permit Changes, and that Polyair Corporation may proceed with the project as described within their requests.

V-21-013 R1 Emission Summary				
Pollutant	2023 Actual (tpy)	Previous PTE V-21-013 (tpy)	Change (tpy)	Revised PTE V-21-013 R1 (tpy)
CO	N/A	N/A	2.42	2.42
NO <sub>x</sub>	N/A	N/A	2.04	2.04
PT	N/A	N/A	0.18	0.184
PM <sub>10</sub>	N/A	N/A	0.18	0.184
PM <sub>2.5</sub>	N/A	N/A	0.18	0.184
SO <sub>2</sub>	N/A	N/A	0.015	0.015
VOC	359.32	782.71 (389.5*)	0.133	782.85 (389.5*)
Greenhouse Gases (GHGs)				
Carbon Dioxide	N/A	N/A	2893.3	2893.30
Methane	N/A	N/A	0.055	0.055
Nitrous Oxide	N/A	N/A	0.0055	0.0055
CO <sub>2</sub> Equivalent (CO <sub>2</sub> e)	N/A	N/A	2896.28	2896.28
Hazardous Air Pollutants (HAPs)				
Benzene	N/A	N/A	2.91E-05	2.91E-05
1,4-Dichlorobenzene	N/A	N/A	5.09E-05	5.09E-05
Formaldehyde	N/A	N/A	2.68E-05	2.68E-05
Hexane; N-Hexane	N/A	N/A	3.39E-05	3.39E-05
Toluene	N/A	N/A	0.002	0.002
Cadmium, Total (as Cd)	N/A	N/A	0.044	0.044
Chromium	N/A	N/A	5.09E-05	5.09E-05
Nickel, Total (as Ni)	N/A	N/A	2.91-05	2.91-05
Combined HAPs:	N/A	N/A	0.046	0.046

\*Based on Federally Enforceable limitation

### SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit 002, 003, 004				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
VOC	The combined limit for Line 1, 2, and the Curing Rooms: 389.5 tpy	Preclude 401 KAR 51:017	Line 1: 975 lb/ton	Operate floor-vent-to-roof-exhaust-stack collection system on extruder lines and curing rooms
	Line 2: 975 lb/ton			
	Line 1 and curing room: 180.5 tpy		Curing Rooms: 325 lb/ton; Based on material balance	Calculate annual VOC emissions based on monthly calculations
	Line 2 and curing room: 173 tpy			
	Curing rooms: 36 tpy can be split between the two curing rooms			
<b>Initial Construction Date:</b> April, 1995				
<b>Process Description:</b>				
<b>002 – Foam Extruder Line #1</b>				
Collection System: Floor – Vents – to – Roof – Exhaust				
Maximum Operating Rate: 530 lbs/hr				
<b>003 – Curing Rooms</b>				
Collection System: Floor – Vents – to – Roof – Exhaust				
Maximum Operating Rate: 78 lbs/hr				
<b>004 – Foam Extruder Line #2</b>				
Collection System: Floor – Vents – to – Roof – Exhaust				
Maximum Operating Rate: 470 lbs/hr				
<b>Applicable Regulation:</b>				
401 KAR 50:012, General application				
<b>Precluded Regulation:</b>				
401 KAR 51:017, Prevention of significant deterioration of air quality				
<b>Comments:</b>				
The following regulations do not apply:				
401 KAR 63:002, Section 2(4)(uu), 40 C.F.R. 63.1290 through 63.1309, Appendix, and Tables 1 through 3 (Subpart III), National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production. Pursuant to 40 CFR 63.1290 (a)(1) – (3) the provisions of Subpart III apply to each new and existing flexible polyurethane foam or re-bond foam process that produces flexible polyurethane or re-bond foam, emits a HAP except for research and development process, and is located at a plant site that is a major source for HAPs. Polyair does not engage in the production of polyurethane foam and is not considered a major source of HAPs. Therefore, Subpart III does not apply to this facility.				

**Emission Unit 002, 003, 004**

401 KAR 63:002, Section 2(4)(rrrr), 40 C.F.R. 63.8780 through 63.8830, Tables 1 through 7 (Subpart MMMMM), National Emission Standards for Hazardous Air Pollutants: Flexible Polyurethane Foam Fabricating Operations. Polyair does not engage in flexible polyurethane foam fabrication operations. The source is not a major source of HAP nor does it operate a flame lamination affected source or a loop splitter. Therefore, Subpart MMMMM does not apply to Polyair.

401 KAR 63:002, Section 2(4)(nnnnn), 40 C.F.R. 63.11414 through 63.11420, Table 1 (Subpart OOOOOO), National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production and Fabrication Area Sources. Pursuant to 40 CFR 63.11414 (a)(2), Subpart OOOOOO applies if you own or operate a flexible polyurethane foam fabrication facility. A flexible polyurethane foam fabrication facility means a facility where pieces of flexible polyurethane foam are cut, bonded, and/or laminated together or to other substrates [40 CFR 63.11419]. Polyair is a producer of polyethylene foam; therefore, this subpart does not apply to this facility.

401 KAR 63:010, Fugitive emissions. This regulation applies to an affected facility such as an apparatus, operation or road that emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division. Polyair does not produce any particulate matter from fugitive sources, so this regulation does not apply.

40 CFR Part 64, Compliance Assurance Monitoring, does not apply because the source is major for VOC, and there is no emission standard or limitation under any applicable regulation for this pollutant.

The RAP analysis required by 401 KAR 50:012 was approved on November 12, 2014.

Under Title V permit V-98-014 R1, Polyair submitted an application received by the Division for Air Quality (Division) on October 27, 2000 for several upgrades to Extruder Lines 1 and 2 that resulted in an increase in the operating capacity. Two changes in particular included the upgrading of the “screen changers” from a manual operation to an automatic indexing system that increased the production hours and the replacing of the primary screw on Extruder Line 2 which increased the output production. These changes were considered as “physical change in or change in method of operation of a major source” under the regulation 401 KAR 51:017, Prevention of Significant Deterioration of Air Quality (PSD). The 2001 Emissions Survey recorded source-wide actual emissions of volatile organic compounds (VOC) to be 353.5 tons per year (tpy) which triggered PSD levels. The PSD review was then evaluated for the construction to see if the net emissions increase would exceed the 40 tpy level of Significant Pollutant emission rate for VOC. It was determined that the modification would result in an increase in VOC of 136.21 tpy. As a result, the source accepted an enforceable limitation of 36 tpy to stay below the Significant Pollutant emission rate in order to preclude PSD source threshold. Actual VOC emissions were not to exceed a total of 389.5 tpy (353.5 tpy + 36 tpy). All existing synthetic minor limits to preclude applicability of PSD for the project submitted October 27, 2000, for VOC emissions were added as part of this revision, issued as V-98-014 R2.

While the emissions from the curing room are not “controlled”, only a portion of the VOCs from the materials are released during the curing process. Original estimates of emissions were based on a mass balance, and an initial stack test was conducted April 28, 2000 that determined that approximately 65% of VOCs are retained within the final product. This is reflected in the KY EIS database as 65% control/capture

**Emission Unit 002, 003, 004**

for the purposes of reflecting the potential emissions from the curing rooms. The collection system is not intended to control emissions, but rather to route emissions out of the building for health and safety reasons.

**Emission Unit 011: Makeup Air Handling Unit #1 (MAU #1)**

Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	0.56 lb/MMBtu	401 KAR 59:015, Section 4(1)(a)	7.6 lb/MMscf, AP-42 Chapter 1.4.	Assumed based upon natural gas combustion
	20% opacity	401 KAR 59:015, Section 4(2)	N/A	Assumed based upon natural gas combustion
SO <sub>2</sub>	3.0 lb/MMBtu	401 KAR 59:015, Section 5(1)(a)(1.)	0.6 lb/MMscf, AP-42 Chapter 1.4.	Assumed based upon natural gas combustion

**Initial Construction Date:** 1/1/2018

**Process Description:**

EMISSION UNIT	DESCRIPTION	EMISSION FACTOR SOURCE
011	<b>Makeup Air Handling Unit #1 (MAU #1)</b> Capacity Heat Input: 3.51 MMBtu/hr Fuel: Natural Gas Installation Date: January 1, 2018 Controls: None	AP-42 Chapter 1.4

**Applicable Regulation:**

401 KAR 59:015, New Indirect Heat Exchangers, applicable to indirect heat exchangers having a heat input capacity greater than one (1) million BTU per hour (MMBtu/hr) commenced on or after April 9, 1972 (401 KAR 59:015, Section 2(1)).

**STATE-ORIGIN REQUIREMENTS:**

401 KAR 63:020 – Potentially hazardous mater or toxic substances.

**Comments:**

The Emission Factors for NO<sub>x</sub> and CO are from AP-42 Table 1.4-1. The Emission Factors for the remaining Criteria Pollutants are from AP-42 Table 1.4-2. The Emission Factors for the HAPS are from AP-42 Table 1.4-3. The Emission Factors for the Greenhouse Gases were taken from 40 CFR 98, Subpart C, Tables C1 & C2.

**Testing Requirements/Results : N/A**

## SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

**Table A - Group Requirements:**

Emission and Operating Limit	Regulation	Emission Unit
Line 1, Line 2, and the curing rooms have a 389.5 tpy VOC emission limit	Preclude 401 KAR 51:017	002, 003, 004
Line 1 and its curing room have a 180.5 tpy VOC emission limit		
Line 2 and its curing room have a 173 tpy VOC emission limit		
Line 1 (including curing rooms) shall not exceed 180.5 tpy VOC; Line 2 (including curing rooms) shall not exceed 173 VOC, plus combined increase for Lines 1 and 2 (including curing rooms) shall be < 36 tpy VOC		

**Table B - Summary of Applicable Regulations:**

Applicable Regulations	Emission Unit
401 KAR 50:012, General application	002, 003, 004
401 KAR 59:015, New indirect heat exchangers	011
401 KAR 63:020, Potentially hazardous matter or toxic substances.	

**Table C - Summary of Precluded Regulations:**

Precluded Regulations	Emission Unit
401 KAR 51:017, Prevention of significant deterioration of air quality	002, 003, 004

**Table D - Summary of Non Applicable Regulations:**

N/A

**Air Toxic Analysis:**

N/A

**Single Source Determination:**

N/A



## SECTION 5 – PERMITTING HISTORY

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD / Syn Minor
V-98-014	Title V – Initial	F685	7/8/1998	9/16/1998	Initial	
V-98-014 R1	Title V – Significant Revision	G560	8/9/2000	3/1/2001	Significant Revision	Yes
V-98-014 R2	Modification	53322	2/10/2002	5/9/2002	Increased Capacity in Line 1 & 2	Yes
V-06-010	Title V - Renewal	APE20040001	5/12/2003	7/12/2006	Renewal	
V-06-010 R1	Title V – Minor Revision	APE20090001	10/9/2009	2/2/2010	Addition of a storage tank	
V-06-010 R2	Title V – 502(b)(10) Change	APE20100001	2/19/2010	2/24/2010	Machinery Transfer	
V-11-018	Title V - Renewal	APE20100002	1/19/2011	7/25/2011	Renewal	
V-11-018 R1	Title V – Off Permit Change	APE20130001	5/28/2013	11/12/2014	RAP Analysis	
V-16-012	Title V - Renewal	APE20160001	3/17/2016	9/29/2016	Renewal	
V-21-013	Title V - Renewal	APE20210001	3/21/2022	7/22/2022	Renewal	

## SECTION 6 – PERMIT APPLICATION HISTORY

Permit Number: V-21-013

Activities: APE20210001

Received: March 24, 2021

Application Complete Date(s): March 1, 2022

Permit Action: ☐ Initial ☒ Renewal ☐ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☐ Yes ☒ No NSR Applicable? ☐ Yes ☒ No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☒ Yes ☐ No

### Description of Action:

APE20210001 (Renewal):

On March 24, 2021, the Division for Air Quality (the Division) received an application for the renewal of the Title V Operating Permit for Polyair Packaging in Nelson County, Kentucky. As part of this renewal Polyair has requested that emission units 010(1) and 010(2) (Foam Laminators) be removed from the permit as they were removed from the facility in 2016. The Responsible Official is being updated as part of this action as well.

APE20210002 (Off-Permit Change):

On October 5, 2021, the Division received an off-permit change notification for the temporary relocation of the curing activities to the warehouse while the curing room is undergoing construction for safety upgrades. There will be no change in emissions and no change to the existing VOC limit for this process is being requested since only the location of the final products are changing, not the final products themselves. The relocation lasted between October 2021 through early March 2022.

V-21-013 Emission Summary		
Pollutant	2020 Actual (tpy)	PTE V-21-013 (tpy)
VOC	347.49	389.5*

\*Based on Federally Enforceable limitation

## APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS	– Ambient Air Quality Standards
BACT	– Best Available Control Technology
Btu	– British thermal unit
CAM	– Compliance Assurance Monitoring
CO	– Carbon Monoxide
Division	– Kentucky Division for Air Quality
ESP	– Electrostatic Precipitator
GHG	– Greenhouse Gas
HAP	– Hazardous Air Pollutant
HF	– Hydrogen Fluoride (Gaseous)
MSDS	– Material Safety Data Sheets
mmHg	– Millimeter of mercury column height
NAAQS	– National Ambient Air Quality Standards
NESHAP	– National Emissions Standards for Hazardous Air Pollutants
NO <sub>x</sub>	– Nitrogen Oxides
NSR	– New Source Review
PM	– Particulate Matter
PM <sub>10</sub>	– Particulate Matter equal to or smaller than 10 micrometers
PM <sub>2.5</sub>	– Particulate Matter equal to or smaller than 2.5 micrometers
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
SO <sub>2</sub>	– Sulfur Dioxide
TF	– Total Fluoride (Particulate & Gaseous)
VOC	– Volatile Organic Compounds

## APPENDIX B – INDIRECT HEAT EXCHANGER EMISSIONS LIMITATIONS

Summary of All Affected Facilities Used to Determine 401 KAR 59:015 Emission Limits								
EU	Fuel(s)	Capacity (MMBtu /hr)	Constructed	Basis for PM Limit	Total Heat Input Capacity for PM Limit (MMBtu/hr)	Basis for SO <sub>2</sub> Limit	Total Heat Input Capacity for SO <sub>2</sub> Limit (MMBtu/hr)	Notes
011	Natural Gas	3.51	2018	Section 4(1)(a)	3.51	Section 5(1)(a) (1.)	3.51	