

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review

Region: Winston-Salem Regional Office
County: Guilford
NC Facility ID: 4100772
Inspector's Name: Thomas Gray
Date of Last Inspection: 08/13/2024
Compliance Code: 3 / Compliance - inspection

Issue Date: XXXX, xx, 2025

Facility Data			Permit Applicability (this application only)				
Applicant (Facility's Name): Carpenter Co.			SIP: 15A NCAC 02D .1111, 02D .1806 and 02Q .0317 of 02D .0530				
Facility Address: Carpenter Co. 1021 East Springfield Road High Point, NC 27263			NSPS: N/A GACT: Subpart OOOOOO PSD: N/A PSD Avoidance: Yes, VOCs NC Toxics: N/A 112(r): N/A Other: N/A				
SIC: 3086 / Plastics Foam Products NAICS: 326140 / Polystyrene Foam Product Manufacturing							
Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V							
Contact Data			Application Data				
Facility Contact	Authorized Contact	Technical Contact	Application Number: 4100772.22C, 4100772.25A Date Received: 11/17/2022, 04/17/2025 Application Type: Modification, Renewal Application Schedule: TV-1st Time, Renewal Existing Permit Data Existing Permit Number: 06300/R13 Existing Permit Issue Date: 08/03/2022 Existing Permit Expiration Date: 07/31/2025				
Brooke Oldham General Manager 1021 East Springfield, Suite 101 High Point, NC 27263 (336) 861-5730 Brooke.Oldham@carpenter.com	Joey Stout Division Manager PO Box 879 Conover, NC 28613 (828) 464-9470 Joey.Stout@carpenter.com	Eric Houston Environmental Coordinator PO Box 879 Conover, NC 28613 (828) 464-9470 Eric.Houston@carpenter.com					
Total Actual emissions in TONS/YEAR:							
CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2023	---	0.6900	96.24	0.5800	---	---	---
2022	---	0.6900	100.74	0.5800	---	---	.00E+00 [Cobalt & compounds]
Consultant: AERIS Environmental, Inc. Contact: Kevin S. Woods, PE Phone: 704.641.7003 Email: kevin@aerisenviro.com							
Review Engineer: Booker Pullen Review Engineer's Signature: Date:				Comments / Recommendations: Issue: 06300T14 Permit Issue Date: xxxxxx, xx, 2025 Permit Expiration Date: xxxxx, xx, 2030			

1.0 Purpose of Application:

The applicant currently holds Air Permit No. 06300R13 which was issued on August 3, 2022 with an expiration date of July 31, 2025. Carpenter Company submitted the following applications for its facility located at 1021 East Springfield Road, High Point, Guilford County, North Carolina.

Application No. 4100772.22C: 1st Time Title V Permit

This application, submitted, pursuant to 15A NCAC 02Q .0500, was received by the Winston-Salem Regional Office on November 17, 2022, which was within 12 months of commencement of operation of the first source among the sources (ID Nos. ES-1C, ES-2C, ES-2B, ES-S1, ES- S2, and ES-3), that were permitted in 06300R11 (issued February 1, 2022). The application was received in the Raleigh Central Office on November 28, 2022, but is considered incomplete due to a missing signed “E5” form (responsible official signature). The completed E5 Form was received on December 8, 2022. The 1st Time Title V application was deemed complete as of this date.

Application No. 4100772.25A: Renewal of Current Construction and Operation Permit

This renewal application, submitted, pursuant to 15A NCAC 02Q .0300, was received by the Winston-Salem Regional Office on April 17, 2025, which was at least 90 days prior to the expiration date of July 31, 2025, as stated in the current permit. The application is considered complete for processing as of April 17, 2025. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

The renewal application will be consolidated into the 1st Time Title V operating application for processing. Technically, processing of the renewal application has been rendered moot, and it will not be considered further, due to the 1st Time Title V application processing. Accordingly, the first page of the cover letter of the 1st Time Title V permit will not state “renewal” and the 1st page of the permit will not include any reference to the renewal application.

The 1st Time Title V permit will go through both a 30-day public comment period along with a 45-day EPA review period. Also, this facility is located in an Environmental Justice (EJ) Area of North Carolina, which will require enhanced public outreach, and include a written Environmental Justice Report.

2.0 Facility Description

The Carpenter Company is primarily an expanded polystyrene (EPS) manufacturing operation used in the insulation and construction industry. Production at this facility is split between two buildings. Building S101 contains the expanded polystyrene manufacturing operation and Building S102 houses the foam gluing processes. EPS manufacturing begins with small polystyrene pellets that are impregnated with 3.4 and 6.7 weight% pentane (regulated as VOC). Pellets are received in 2,200-pound supersacks and transferred by gravity into a steam-heated expander which is used to expand the pellets. Expanded pellets are aged in large ceiling-mounted bags and then molded into blocks using additional steam and vacuum. Molded blocks are further aged within the warehouse area of the facility and later cut to customer specifications prior to shipping. Foam assembly uses polyurethane foam obtained from Carpenter’s Conover, North Carolina facility and relatively small quantities of a single VOC-containing adhesive to fabricate furniture cushions and pillows.

An existing hot wire cutting operation (I-HWC) is to be exhausted to the outdoors for industrial hygiene concerns. The operation uses a resistively heated wire to cut large, molded blocks of expanded polystyrene into sheets. Smoke from the cutting operation is an irritant to employees working in the immediate vicinity and will be vented to the outdoors. This operation is requested to be permitted as an insignificant activity in accordance with 15A NCAC 02Q .0503(8) – Insignificant activities because of size or production rate.

A planned laminator (I-LAM) will be used to laminate a protective plastic film to one or both sides of an expanded foam core. Lamination will be achieved by passing the foam and plastic film through a set of heated rolls. A small, electrically heated, hot oil system will be used to supply heat to the rolls. Emissions are not expected. This operation is also requested to be permitted as an insignificant activity in accordance with 15A NCAC 02Q .0503(8) – Insignificant activities because of size or production rate.

The facility currently operates from 5:30 am to 3:00 pm, Monday through Friday, for 51 weeks per year.

3.0 History/Background/Application Chronology

History/Background

- 7/27/2017 Application No. 4100772.17A was submitted for the renewal of the Synthetic Minor permit for this facility. The permit was issued as 06300R10 on August 7, 2017.
- 11/1/2021 Application No. 4100772.21A was submitted requesting the change from a Synthetic Minor permit to a Title V permit for this facility because of an increase in production activities which resulted in an increase in potential VOC emissions that would exceed 100 tons per 12-month period without any physical modification to equipment. The permit was issued as 06300R11 on February 1, 2022. An application would need to be submitted within one year of the issuance of this permit for the first-time Title V permit.
- 4/21/2022 Applicability Determination No. 3803 was received requesting that the planned hot roll laminator that will be used to laminate a protective plastic film to one or both sides of an expandable polystyrene (EPS) core, be considered exempt from air permitting requirements per 15A NCAC 02Q .0503(8) – Insignificant activities because of size and production rate. The approval letter for this process was issued for the planned laminator on April 27, 2022.
- 7/12/2022 Application No. 4100772.22A was received for an Administrative Amendment modification to correct the address for document submittals. The address was changed from the Raleigh Regional Office to the Winston-Salem Regional Office. Permit No. 06300R12 was issued on July 20, 2022.
- 7/12/2022 Application No. 4100772.22B was received for an Administrative Amendment modification to correct the emission source ID and emission description for source ES-3. Also, 15A 02D .1111 (40 CFR 63, Subpart OOOOOO), 02D .1806, and 02Q .0317 of 02D .0530 placed back into the permit. Permit No. 06300R13 was issued on August 3, 2022.

Application Chronology

- 11/17/2022 Application No. 4100772.22C was received by the Winston-Salem Regional Office on November 17, 2022 and was sent to the Raleigh Central Office (RCO). The RCO received the application on November 28, 2022. The application is for the 1st Time Title V operating permit.
- 11/17/2022 1st Time Title V Application No. 4100772.22C was copied into Laserfiche.
- 11/29/2022 DAQ sent an acknowledgment letter indicating that Application No. 4100772.22C for a 1st Time Title V permit contained all the required elements for processing, however the application was not complete due to a missing signed “E5” form (responsible official signature).
- 12/8/2022 The “E5” form, signed by the responsible official was received. Application 4100772.22C was considered complete on this date.

- 9/6/2024 PFAS screening questions were sent (by Jeff Twisdale) to Carpenter Company to help DAQ identify potential air emission sources of emerging contaminants. A response was received from the applicant on November 26, 2024.
- 4/17/2025 Renewal Application No. 4100772.25A was received by the Winston-Salem Regional Office.
- 4/21/2025 Renewal Application No. 4100772.25A was copied into Laserfiche.
- 4/23/2025 DAQ sent an acknowledgment letter indicating that Renewal Application No. 4100772.25A contained all the required elements for processing and that the application was considered complete on April 17, 2025.
- 4/30/2025 Draft permit and review forwarded the Stationary Source Compliance Branch (SSCB) for comments. A response was received on May 2, 2025 stating that SSCB (Samir Parkeh) did not have any comments.
- 4/30/2025 Draft permit and review forwarded to regional office for comments. Comments were received (Thomas Gray) on May 20, 2025 with some administrative type comments which were corrected in the review.
- 5/12/2025 Draft permit forwarded to the applicant. Comments were received (Kevin Woods) on May 15, 2025 requesting that the PFAS Disclosure Statement be removed from the Permit because the company does not add or use PFAS compounds at the facility. After discussion with upper management, the statement was removed.
- 5/13/2025 Draft permit and review forwarded to the Supervisor for comments. Comments were received (Rahul Thaker) on June 12, 2025. The permit and review were revised accordingly.
- date Draft permit and permit review forwarded to public notice including the Environmental Justice Report. See Section 11.0 of this Document for a summary of comments and responses.
- date Draft permit and permit review forwarded to the US EPA for the 45-day review. See Section 11.0 of this Document for a summary of comments and responses.

4.0 Permit Modifications/Changes and TVEE Discussion

The following changes were made to Air Permit No. 06300R13*

Page(s) of new Permit	Section in T11	Description of Changes
Page 1	Cover Letter	<ul style="list-style-type: none"> Updated letterhead and permit using new permit shell. Updated permit revision numbers and dates throughout.
Page 2	Cover Letter	<ul style="list-style-type: none"> Changed engineer's name and contact information to Booker T. Pullen
Page 3	Cover Letter	<ul style="list-style-type: none"> Added page containing "Notice Regarding The Right to Contest A Division Of Air Quality Permit".
Page 4	Cover Letter	<ul style="list-style-type: none"> Revised the Summary of Changes to the Permit page.
Page 1	Permit	<ul style="list-style-type: none"> Changed Permit number, changed "Replaces Permit No.", changed effective date of Permit, revised the application number and the complete application date.
Page 2	Permit	<ul style="list-style-type: none"> Added Table of Contents to reflect the most current shell language and format.
Page 3	Permit	<ul style="list-style-type: none"> Added list of Acronyms.
Page 4	Permit, Section 1	<ul style="list-style-type: none"> Added the Permitted Sources List.
Pages 5-7	Permit, Section 2.1	<ul style="list-style-type: none"> Added Specific Limitations and Conditions for sources.

Page(s) of new Permit	Section in T11	Description of Changes
Pages 8	Permit, Section 2.2	• Added Multiple Emissions Section.
Page 9	Permit, Section 2.3	• Added Permit Shield for Nonapplicable Requirements.
Page 10	Permit Section 3.0	• Added Insignificant Activities List
Pages 11-19	Permit Section 4.0	• Added General Conditions (version 8, 7/10/2024).

* This list is not intended to be a detailed record of every change made to the permit but a summary of those changes.

5.0 Existing Permitted Sources including Associated Pollution Controls and Appurtenances and Insignificant Activities

The following table contains a summary of all permitted emission sources and associated air pollution control devices and appurtenances located at the facility:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
Expanded Polystyrene Bead Operations			
ES-1C	Polystyrene Bead Expander utilizing a VOC as an expanding agent	N/A	N/A
ES-2C	Polystyrene Block Mold with a Mold Vent	N/A	N/A
ES-2B	Polystyrene Mold Vacuum Pump Discharge	N/A	N/A
ES-S1	Polystyrene Bead Storage	N/A	N/A
ES-S2	Polystyrene block emissions	N/A	N/A
Polystyrene Foam/Fiber/Fabric Assembly and Adhesive Coating Operations			
ES-3 GACT 000000	Polyurethane Foam/Fiber/Fabric Assembly and Adhesive Coating Operations	N/A	N/A

The following table contains a summary of all insignificant activities that will be located at the facility.

Emission Source ID	Description	Exemption Regulation	Source of TAPs?	Source of Title V pollutants?
I-B-1	Natural gas-fired boiler (6.277 million Btu per hour heat input capacity)	02Q .0503(8)	Yes	Yes
I-B-2	Natural gas-fired boiler (1.34 million Btu per hour heat input capacity)	02Q .0503(8)	Yes	Yes
I-HWC*	Hot Wire Cutting Operation	02Q .0503(8)	Yes	Yes
I-LAM*	Film Laminator	02Q .0503(8)	Yes	Yes

* Insignificant Activity added in the 1st Time Title V

This 1st Time Title V permit is being processed with the addition of new equipment that will be included in the permit as insignificant activities in accordance with 15A NCAC 02Q. 0503(8). The Title V Equipment Editor (TVEE) will be revised accordingly. TVEE was approved by Connie Horne on June 5, 2025.

6.0 Regulatory Review

This facility is subject to the following regulations. The facility's equipment and operations will not change from the previous permit revision except the addition of two insignificant activities. The permit was updated to reflect the most current stipulations for all applicable regulations, where necessary for issuance of a 1st Time Title V permit.

15A NCAC 02Q .0503(8) "Insignificant Activities Because of Size or production Rate"
15A NCAC 02D .0503 "Particulates From Fuel Burning Indirect Heat Exchangers" (exempt source(s))
15A NCAC 02D .0516 "Sulfur Dioxide Emissions From Combustion Sources" (exempt source(s))
15A NCAC 02D .0521 "Control Of Visible Emissions" (exempt source(s))
15A NCAC 02D .1111 "Generally Available Control Technology" (40 CFR 63, Subpart OOOOOO)
15A NCAC 02D .1806 "Control and Prohibition of Odorous Emissions"
15A NCAC 02Q .0317 "Avoidance" of 02D .0530 "Prevention of Significant Deterioration"
15A NCAC 02Q .0512 "Permit Shield for Non-applicable Requirement"

The Carpenter Company's requirements under each rule that applies to the facility is discussed below. In addition, some rules that do not apply to this facility are also discussed in Section 7.0 below.

- a. 15A NCAC 02Q .0503(8) "Insignificant Activities Because of Size or Production Rate"
- The existing hot wire cutting operation (I-HWC) is to be exhausted to the outdoors for industrial hygiene concerns. The operation uses a resistively heated wire to cut large, molded blocks of expanded polystyrene into sheets. Smoke from this cutting operation will be vented to the outdoors. Based on engineering judgement, the emissions of particulate and volatile organic compounds are not expected to be greater than 5 tons per year. In accordance with 15A NCAC 02Q .0503(8), an insignificant activity (IA) "because of size or production rate" means any activity whose emissions would not violate any applicable emissions standard and whose potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year of any individual regulated criteria pollutant. This source will be listed as an IA in the permit without any applicable regulatory requirements.
 - A laminator (I-LAM) will be used to laminate a protective plastic film to one or both sides of an expanded foam core. Lamination will be achieved by passing the foam and plastic film through a set of heated rolls. A small, electrically heated, hot oil system will be used to supply heat to the rolls. Emissions are not expected. Based on engineering judgement, volatile organic compound emissions are not expected to be greater than 5 tons per year. In accordance with 15A NCAC 02Q .0503(8), an insignificant activity "because of size or production rate" means any activity whose emissions would not violate any applicable emissions standard and whose potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year of any individual regulated criteria pollutant. This source will be listed as an IA in the permit without any applicable regulatory requirements.
- b. 15A NCAC 02D .0503 "Particulates From Fuel Burning Indirect Heat Exchangers" (insignificant sources)
This regulation applies to the two (2) Natural Gas-fired Boilers (ID Nos. I-B-1 and I-B-2), and it limits particulate emissions according to the following equation, where E is the allowable emission limit in pounds per million Btu and Q is the maximum heat input in million Btu per hour.

$$E_{\text{allowable}} = 1.09 \times Q^{-0.2594}$$

The maximum heat input capacity for these boilers is 6.277 million Btu heat input per hour I-B-1 and 1.34 million Btu heat input per hour I-B-2. In accordance with 15A NCAC 02D. 0503(c), for heat input capacities up to and including 10 million Btu per hour, the allowable particulate emission rate is 0.6 pounds of particulate per million Btu heat input.

Using the AP-42 PM emission factor of 7.6 pounds of PM per million standard cubic feet (5.7 condensable + 1.9 filterable) for Natural Gas Combustion (Table 1.4-2, 7/98), compliance with this regulation is determined as follows:

$$PM_{natural\ gas} = \frac{7.6\ lbs\ total\ PM}{1 \times 10^6\ scf} \times \frac{1\ scf}{1,020\ Btu} \times \frac{1 \times 10^6\ Btu}{million\ Btu} = \frac{0.0075\ lbs\ total\ PM}{million\ Btu}$$

0.0075 lbs total PM per million Btu < the allowable amount of 0.6 lbs total PM per million Btu

Because these boilers are considered insignificant (I-B-1 and I-B-2), they are required to be listed/included in the permit as insignificant activities per 15A NCAC 02Q .0503(8) and 02Q .0508(i)(15). Each is subject to and required to comply with the emission limit of 0.0075 lb/million Btu as above. However, this applicable requirement for the IAs will not be provided in the permit .

- c. 15A NCAC 02D .0516 “Sulfur Dioxide Emissions From Combustion Sources” (insignificant sources)
 This regulation applies to combustion sources. The two Natural Gas-fired Boilers are subject to this regulation. It limits the emission of SO₂ from any source of combustion that is discharged from any vent, stack, or chimney to 2.3 pounds of SO₂ per million Btu input. Using the emission factor of 0.6 pounds of SO₂ per million standard cubic feet from AP-42 Table 1.4-2 (Natural Gas Combustion, rev. 07/98), the following equation demonstrates compliance with this regulation.

$$SO_{2\ natural\ gas} = \frac{0.6\ lbs\ SO_2}{1 \times 10^6\ scf} \times \frac{1\ scf}{1,020\ Btu} \times \frac{1 \times 10^6\ Btu}{million\ Btu} = \frac{0.00059\ lbs\ SO_2}{million\ Btu}$$

0.00059 pounds of SO₂ is < the allowable amount of 2.3 pounds of SO₂ per million Btu

Because these boilers are considered insignificant (I-B-1 and I-B-2), they are required to be listed/included in the permit as insignificant activities per 15A NCAC 02Q .0503(8) and 02Q .0508(i)(15). Each is subject to and required to comply with the emission limit of 2.3 lb/million Btu as above. However, this applicable requirement for the IAs will not be provided in the permit .

- d. 15A NCAC 02D .0521 “Control of Visible Emissions” (insignificant sources)
 This regulation applies to the two (2) Natural Gas-fired Boilers (ID Nos. I-B-1 and I-B-2) and the existing hot wire cutting operation (I-HWC). This regulation limits visible emissions (VE) to 40% opacity for sources manufactured as of July 1, 1971, and to 20% opacity for sources manufactured after July 1, 1971.

Because these boilers and the hot wire cutting operation are considered insignificant (I-B-1, I-B-2 and I-HWC respectively), they are required to be listed/included in the permit as insignificant activities per 15A NCAC 02Q .0503(8) and 02Q .0508(i)(15). Each is subject to the 20% opacity because of the manufacture date, however this applicable requirement for the IAs will not be provided in the permit.

- e. 15A NCAC 02D .1111 “Maximum Achievable Control Technology” (40 CFR 63, Subpart OOOOOO)
 Please see discussion in Section 7.0 below.

- f. 15A NCAC 02D .1806 “Control and Prohibition of Odorous Emissions”
The Permittee shall prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility’s boundary. During the latest inspection of the facility on August 13, 2024, no objectionable odors were detected at the facility’s boundary. A review of the IBEAM database revealed no odor complaints had been received since the previous inspection. Compliance is indicated. This is a state-only requirement.
- g. 15A NCAC 02Q .0512 “Permit Shield and Application Shield”
Please see discussion in Section 7.0 below.
- h. 15A NCAC 02Q .0317 “Avoidance” of 15A NCAC 02D .0530 “Prevention of Significant Deterioration”
Please see discussion in Section 7.0 below.

7.0 NSPS, NESHAPS/MACT, PSD Avoidance (VOCs), 112(r), CAM

- a. NSPS
The facility is not currently subject to any New Source Performance Standards. This 1st Title V application processing does not change the facility’s NSPS status.

The two insignificant boilers at Carpenter (I-B-1 with 6.277 million Btu heat input capacity and I-B-2 with capacity 1.34 million btu per hour heat input) are not subject to NSPS Subpart Dc because the capacity of each boiler is below the applicability threshold of 10 million Btu per hour heat input.
- b. 15A NCAC 02D .1111 “Maximum Achievable Control Technology” (40 CFR 63, Subpart OOOOOO) “National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production and Fabrication Area Sources”. A facility is subject to this subpart if they own or operate an area source of hazardous air pollutant (HAP) emissions that meets the criteria in paragraph i. or ii. below:
 - i. You own or operate a plant that produces flexible polyurethane foam or rebond foam as defined in 40 CFR 63.1292 of Subpart III.
 - (A) Flexible polyurethane foam process means the equipment used to produce a flexible polyurethane foam product. For the purpose of this subpart, the flexible polyurethane foam process includes raw material storage; production equipment and associated piping, ductwork, etc.; and curing and storage areas. [40 CFR 63.1292 “Definitions”]
 - (B) Foam fabrication process means an operation for cutting or bonding flexible polyurethane foam pieces together or to other substrates. [40 CFR 63.1292 “Definitions”]
 - (C) Rebond foam means the foam resulting from a process of adhering small particles of foam (usually scrap or recycled foam) together to make a usable cushioning product. Various adhesives and bonding processes are used. A typical application for rebond foam is for carpet underlay. [40 CFR 63.1292 “Definitions”]
 - (D) Rebond foam process means the equipment used to produce a rebond foam product. For the purpose of this subpart, the rebond foam process includes raw material storage; production equipment and associated piping, ductwork, etc.; and curing and storage areas. [40 CFR 63.1292 “Definitions”]
 - ii. You own or operate a flexible polyurethane foam fabrication facility, as defined in 40 CFR 63.11419. A flexible polyurethane foam fabrication facility is a facility where pieces of flexible polyurethane foam are cut, bonded, and/or laminated together or to other substrates.

Carpenter Company is subject to GACT/NESHAP Subpart OOOOOO "Flexible Polyurethane Foam Production and Fabrication Operations" as an area source, because it cuts, bonds, and /or laminates flexible polyurethane foam pieces together or to other substrates and the emissions of Hazardous Air Pollutants (HAP) is less than 10 tons per year for a single HAP and less than 25 tons per year for total HAPs. The standards and compliance requirements are the Generally Available Control Technology (GACT) requirements. In accordance with 40 CFR 63.11418, the provisions in 40 CFR part 63, Subpart A, do not apply to sources subject to this subpart.

Standards and Compliance - Pursuant to 40 CFR 63.11416 and 63.11417, the following standards shall apply to this facility:

- i. The Permittee shall not use any adhesive containing methylene chloride in a flexible polyurethane foam fabrication process.
- ii. Recordkeeping Requirements - the Permittee shall demonstrate compliance with the requirements listed above in this Section using adhesive usage records, Material Safety Data Sheets or engineering calculations.
- iii. The Permittee shall retain the records used to demonstrate compliance for five years with the last two years of data retained on site. The remaining three years of data may be retained off site.
- iv. The Permittee shall make the records available for inspection upon request of DAQ personnel.

In addition to the above NESHAP-specific requirements, the Permittee will be required to comply with Title V program's semi-annual reporting requirements.

c. 15A NCAC 02Q .0512 "Permit Shield and Application Shield"

This Regulation states that the Director (DAQ) shall place in a permit issued pursuant to this Section a permit term or condition in writing that requirements that are specifically identified are not applicable to the source and the permit includes that determination or a concise summary thereof.

The following MACTs do not apply to this facility:

- 40 CFR 63, Subpart DDDDD "Industrial, Commercial, and Institutional Boilers"
The facility is not subject to Subpart DDDDD because it is not a major source of HAPs.
- 40 CFR 63, Subpart JJJJJ "Industrial, Commercial, Institutional Steam Generating Units (Area Sources)". The facility is not subject to Subpart JJJJJ because the exempt boilers (I-B-1 and I-B-2) are gas-fired units and specifically excluded from applicability of this standard. [40 CFR 63.11195(e)]
- 40 CFR 63, Subpart III "National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production" (at a major source of HAPs). The facility is not subject to this Subpart because it is not a major source of HAPs.
- 40 CFR 63, Subpart MMMMM "Flexible Polyurethane Foam Fabrication Operations"
The facility is not subject to the Subpart because it does not operate a flame lamination source, does not use HAP-based adhesives, and is not a major source of HAPs.

The permit shield for the above non-applicable requirements will be provided through the issuance of a 1st Time Title V permit.

d. 15A NCAC 02Q .0317 "Avoidance" of 02D .0530 "Prevention of Significant Deterioration"

The PSD avoidance condition was added in Permit No. 0600R11 when the Synthetic Minor limitation was removed from the permit. The Carpenter facility is not one of the listed source categories with a 100 ton per year limit. The potential emissions of VOCs are greater than 250 tons per year, therefore a 250 ton per year limit was added to the permit to avoid PSD applicability. To maintain compliance with this condition, the polystyrene bead operations and its associated sources are limited to 14,000,000 pounds of product per 12-month consecutive periods. Calculations of VOC emissions per month shall be made at the end of each month.

VOC emissions shall be determined by multiplying the total amount of each type of VOC-containing material consumed during the month by the VOC content of the material. The calculations and the total amount of VOC emissions shall be recorded monthly in a logbook (written or electronic format). The facility is then required to submit reports detailing VOC emissions semi-annually (January 30, June 30) for the preceding 6-months (including rolling 12-month total for previous 17-months).

The facility maintains spreadsheets and chains of analysis, certifying bead pentane content. Records indicated that the rolling 12-month VOC emissions from August '23 to August '24 were 87.89 tons total. The facility emitted 96.43 tons of VOC for the 2023 calendar year. The highest rolling average occurred from May 2023 to 2024, with reported VOC emissions of 97.84 tons. Continued compliance with this condition is expected.

e. 112(r) "Prevention of Accidental Releases"

The facility is not subject to the Risk Management Plan (RMP) requirements because it does not purchase, produce, utilize or store any of the regulated substances in quantities above the 112(r) thresholds. No change with respect 112(r) is anticipated under this 1st Time Title V Permit modification.

f. Compliance Assurance Monitoring (CAM)

The CAM rule (40 CFR 64; 15A NCAC 02D .0614) applies to each pollutant specific emissions unit (PSEU) at facilities required to hold Title V permit that meets all three following criteria:

- the unit is subject to any (non-exempt: e.g., pre-November 15, 1990, Section 111 or Section 112 standard) emission limitation or standard for the applicable regulated pollutant.
- the unit uses any control device to achieve compliance with any such emission limitation or standard.
- 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 (i.e., 100 tons per year for criteria pollutants or 10/25 tons per year for HAPs).

CAM is not applicable to this facility because it does not utilize a control device to achieve compliance with any emission standard or limitation.

8.0 Facility Wide Emissions:

- a. This facility does not emit toxic air pollutants that are in excess of the thresholds of 15A NCAC 02Q .0700.

TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE						
INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY.						
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Modeling Required ?	
					Yes	No
Acetaldehyde	75070	9.4E-08	2.2E-06	2.0E-04		X
Acrolein	107028	1.1E-07	2.7E-06	2.4E-04		X
Ammonia	7664417	0.020	0.47	42		X
Benzene	71432	1.3E-05	3.1E-04	0.027		X
Benzo(a)pyrene	50328	7.4E-09	1.8E-07	1.6E-05		X
Formaldehyde	50001	4.6E-04	0.011	0.98		X
Hexane	110543	0.011	0.27	24		X
Toluene	108883	2.1E-05	5.0E-04	0.044		X
COMMENTS:						

- b. The following information was taken from the application No. 4100772.22C for the Expanded Polystyrene Foam Blocks (EPS).

EPS Operations (ES-1C, ES-2B, ES-2C, ES-S1, ES-S2)

GIVEN

Residual pentane is present in varying concentrations (3.4 to 6.7 wt%) within the unexpanded polystyrene beads used as raw material by the facility. Steam is used to expand the beads in two stages. The initial expansion is accomplished within the Bead Expander (ES-1C) from which beads are transferred to bead storage bins (ES-S1) for aging. After aging, the pre-expanded beads are transferred to the block mold (ES-2B, ES-2C) where steam is used to further expand the beads under vacuum and to fuse them together to form blocks of expanded polystyrene (EPS) foam. Finished blocks are further aged before being cut to size according to customer specifications.

CY2021 Throughput

Throughput information has been obtained from daily batch records maintained by the facility for compliance reporting. The quantity of pentane processed has been calculated using batch weight and pentane content data.

$$\begin{aligned} \text{Production Throughput} &= \frac{5,943,609}{262,586} \text{ lbs} \\ \text{Pentane Processed} &= \text{ } \end{aligned}$$

Potential Throughput

Potential throughput is calculated using the maximum hourly throughput (= 3,000 lb/hr, limited by the throughput capacity of the expander (ES-1C)).

$$\begin{aligned} \text{Maximum Throughput} &= \frac{3,000}{26,280,000} \text{ lbs/hr} \\ \text{Production Throughput} &= \frac{26,280,000}{1,161,039} \text{ lbs} \\ \text{Pentane Processed} &= \text{ } \end{aligned} \quad \text{Proposed Production Limit} = \frac{14,000,000}{\text{ }} \text{ lbs}$$

Previous testing conducted at Carpenter's Fogelsville, PA and Conyers, GA facilities has shown that residual pentane within the polystyrene beads averages 91% of manufacturer's stated content. Further testing at the Carpenter facilities has demonstrated that pentane is emitted as follows: 22% from bead storage (ES-S1), 24% from expansion (ES-1C), 15% from molding (ES-2B, ES-2C) and 15% from block storage (ES-S2). Approximately 24% of pentane remains in the finished product and is not emitted. Emission calculations are consistent with previous applications and annual reports.

Pentane is regulated as a Volatile Organic Compound (VOC).

Pentane Loss			Adjustment to Mfg's Stated Content =	91%
Expander	ES-1C	24%		
Aging	ES-S1	22%		
Molding	ES-2B, ES-2C	15%		
Block	ES-S2	15%		
76%				

ANNUAL EMISSIONS, CY2021

Pollutant	ES-1C	ES-2B	ES-2C	ES-S1	ES-S2	Total
Emissions (tons)	29	9.0	9.0	26	18	91

Example (ES-1C): Emissions (tons) = Total Pentane Usage (lbs) x 91% Adjustment ÷ 2000 lb/ton x 24% Emitted

Example calculation of actual VOC emissions from source ES-1C:

$$VOC_{\left(\frac{tons}{year}\right)} = \frac{262,586 \text{ lbs pentane}}{year} \times \frac{91}{100} (Adj) \times \frac{24}{100} (emitted) \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{28.67 \text{ tons VOC}}{year}$$

c. The following information was taken from the application No. 4100772.22C for the Foam Operations.

Foam Operations (ES-3)

GIVEN

The polyurethane foam assembly operation exists as an entirely separate operation from the expanded polystyrene (EPS) operation in the adjacent building. The polyurethane foam assembly uses foam obtained from Carpenter's Conover, NC facility and a single VOC-containing adhesive applied by spray guns.

Adhesive is applied manually using several pneumatic spray guns. All emissions are evaporative and reported as fugitive. Adhesive (glue) storage drums are not open to the indoor atmosphere. Emissions of all volatile contents are attributed to the spray guns operation (ES-3).

CY2021 Glue Usage = 3,465 gallons

Potential Glue Usage = Actual glue usage x 3 potential shifts
 = 10,395 gallons

VOC Content (VA-888) = 2.14 lb/gal (per SDS)

Note: VA-888 does not contain HAP or TAP constituents

EMISSIONS

Pollutant	Actual Emissions		Potential Emissions	
	lbs	tons	lbs	tons
VOC	7,415	3.7	22,245	11

Sample Calculation:

$$VOC_{\left(\frac{tons}{year}\right)} = \frac{3,465 \text{ gallons glue}}{year (one shift)} \times 3 \text{ shifts} \times \frac{2.14 \text{ pounds of VOC}}{\text{gallon glue}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{11.12 \text{ tons VOC}}{year}$$

- d. The following information was taken from the application No. 4100772.22C for the Fuel Burning Sources.

Fuel Burning Sources (I-B-1 & I-B-2)

POTENTIAL EMISSIONS

AIR POLLUTANT EMITTED	CAS	I-B-1 (tpy)	I-B-2 (tpy)	Total (tpy)
PM	-	0.014		0.014
PM-10 / PM-2.5	-	0.012	Not included	0.012
SULFUR DIOXIDE (SO ₂)	-	0.016	as	0.016
NITROGEN OXIDES (NO _x)	-	2.7	comfort	2.7
CARBON MONOXIDE (CO)	-	2.3	heat	2.3
VOLATILE ORGANIC COMPOUNDS (VOC)	-	0.15		0.15
GREENHOUSE GASES (GHG)		(tpy)	(tpy)	(tpy)
CARBON DIOXIDE (CO ₂)		3,214		3,214
METHANE (CH ₄)		1.5		1.5
NITROUS OXIDE (N ₂ O)		1.8		1.8
AIR POLLUTANT EMITTED	CAS	(lb/yr)	(lb/yr)	(lb/yr)
Acetaldehyde (TH)	75070	8.2E-04		8.2E-04
Acrolein (TH)	107028	9.7E-04		0.0010
Ammonia (T)	7664417	173		173
Benzene (TH)	71432	0.11		0.11
Benzo(a)pyrene (T)	50328	6.5E-05		6.5E-05
Cobalt Compounds (H)	COC	0.0045		0.0045
Formaldehyde (TH)	50000	4.0		4.0
Hexane, n- (TH)	110543	97		97
Lead Compounds (H)	PBC	0.027		0.027
Napthalene (H)	91203	0.033		0.033
Selenium Compounds (H)	SEC	0.0013		0.0013
Toluene (TH)	108883	0.18		0.18

- e. The facility-wide potential emissions will increase by a small amount with the addition of the new insignificant activity (Laminator, I-LAM) that is vented outdoors for this 1st TV permit. Including these small increases in HAP emissions, the emissions of Hazardous Air Pollutants (HAP) is still less than 10 tons per year for a single HAP and less than 25 tons per year for total HAPs. Actual emissions for criteria pollutants and HAPs for the previous five years reporting periods are provided in the header of this permit review.

9.0 Compliance Status:

DAQ has reviewed the compliance status of facility. During the most recent inspection, conducted on August 14, 2024 (Thomas J. Gray, WSRO), the facility appeared to be in compliance with all applicable requirements. Further, the facility has had no air quality violations (NOD, NOV, or NOV/NRE) within the last five years. The facility's Annual Compliance Certification was received by the Winston-Salem Regional Office on January 14, 2025, and indicated compliance with all applicable requirements in the year.

10.0 Environmental Justice Requirements

This 1st Time Title V application requires enhanced public outreach under the DEQ/DAQ's Environmental Justice (EJ) initiative. Moreover, as stated previously in the review, since the Carpenter Company is located in the EJ Area, DEQ will also prepare a written EJ report.

DEQ's Environmental Justice Program works to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. The law provides that no person shall, on the grounds of race, color, national origin, sex, age, or disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, the Rehabilitation Act of 1973, and all other pertinent nondiscrimination laws and regulations.

11.0 Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 02Q .0521 above. However, it is noted that the DAQ voluntarily sends the public notice and draft permit, including statement of basis, to all neighboring states for all Title V permitting actions (renewals, significant modifications, and reopener for cause), regardless of whether the state/local agency is deemed an "affected state" with respect to a particular facility.

The 30-day public comment period ran from _____ to _____. _____ public comments were received.....

Comments from the 30-day comment period.....

The 45-day EPA review period ran from _____ to _____. _____ EPA comments were received.....

Comments from the 45-day EPA review.....

12.0 Other Regulatory Considerations

- A P.E. seal is NOT required for this 1st Time Title V permit application.
- A zoning consistency determination is NOT required for this 1st Time Title V permit application because none of the changes discussed herein amount to expansion of an existing facility, consistent with 02Q .0507(d)(1).
- A permit fee (\$1002) is required for this 1st Title V Air permit, and it was submitted with the application.

DAQ has determined that per- and polyfluoroalkyl substances, also known as PFAS, may be emitted from facilities operating under SIC Code 3086, Plastics Foam Products. DAQ sent a PFAS Questionnaire to Carpenter Co. on XXXX, and a response was received on YYYY. The facility's response is documented below.

DAQ Question 1:

Will your facility use any material or products in your operations that contain fluorinated chemicals? NO If so, please identify such materials or products and the fluorinated chemicals they contain.

DAQ Question 2:

Will your facility formulate/create products or byproducts (directly or indirectly) that contain fluorinated chemicals (across multiple media)? [NO] If so, please identify such products or byproducts and the fluorinated chemicals they contain.

DAQ Question 3:

Will your facility generate solid, liquid, or gaseous related emissions, discharges, or wastes/products containing fluorinated chemicals? [NO] If so, please identify such waste streams or materials and the fluorinated chemicals they contain.

DAQ Question 4:

Do your facility's processes or operations use equipment, material, or components that contain fluorinated chemicals (e.g., surface coating, clean room applications, solvents, lubricants, fittings, tubing, processing tools, packaging, facility infrastructure, air pollution control units)? [NO] Could these processes or operations directly or indirectly (e.g., through leaching, chemical process, heat treatment, pressurization, etc.) result in the release of fluorinated chemicals into the environment? [NO]

DAQ Question 5:

List the fluorinated chemicals identified (i.e., through testing or desktop review) above in your response under the appropriate methods/approaches? [N/A] If one is not, are they on any other known US or International target lists? [N/A]

- OTM-45 (air emissions)
- Methods 533 & 537.1 (drinking water)
- SW-846: Method 8327 (water) Draft Method 1633 (water, solids, tissue)
- Total PFAS" Draft Method 1621 for Adsorbable Organic Fluorine (wastewater)
- Non targeted analytical methods
- Qualitative approach through suspect screening.

DAQ Question 6:

Are there other facilities or operations in the U.S. or internationally engaged in the same or similar activities involving fluorinated chemicals addressed in your response to the above questions? [NO] If so, please provide facility identification information? In addition, are there any ISO (International Organization for Standardization) certification requirements? [N/A]

DAQ Question 7:

Do you plan to store AFFF on site, use it in fire training at the site, use it for fighting fires at the facility, or include it in a fire fighting system at the site? [NO]

DAQ Question 8:

Are other emerging contaminants (e.g., 1,4-dioxane, brome, perchlorate, 1,2,3-Trichloropropane) used in some capacity within your facility or operations? [NO]

DAQ Question 9:

Do you need technical assistance to answer the questions above. [NO]

The Carpenter Company responded to the screening questions on November 26, 2024. Their responses indicated that they do not currently utilize PFAS or other emerging contaminants in their materials, process chemicals, or emissions and do not have any immediate plans to introduce these substances into their operations.

The following “State-enforceable only” statement will be placed in all permits that DAQ sends the PFAS questions to.

- Removal of General Condition J “Emergency Provisions [40 CFR 70.6(g)]”
 - EPA has promulgated a rule (88 FR 47029, July 21, 2023), with an effective date of August 21, 2023, removing the emergency affirmative defense provisions in operating permits programs, codified in both 40 CFR 70.6(g) and 71.6(g). EPA has concluded that these provisions are inconsistent with the EPA’s current interpretation of the enforcement structure of the CAA, in light of prior court decisions¹. Moreover, per EPA, the removal of these provisions is also consistent with other recent EPA actions involving affirmative defenses² and will harmonize the EPA’s treatment of affirmative defenses across different CAA programs.
 - As a consequence of this EPA action to remove these provisions from 40 CFR 70.6(g), it will be necessary for states and local agencies that have adopted similar affirmative defense provisions in their Part 70 operating permit programs to revise their Part 70 programs (regulations) to remove these provisions. In addition, individual operating permits that contain Title V affirmative defenses based on 40 CFR 70.6(g) or similar state regulations will need to be revised.
 - Regarding NCDAQ, it has not adopted these discretionary affirmative defense provisions in its Title V regulations (15A NCAC 02Q .0500). Instead, DAQ has chosen to include them directly in individual Title V permits as General Condition (GC) J.

Per EPA, DAQ is required to promptly remove such impermissible provisions, as stated above, from individual Title V permits, after August 21, 2023, through normal course of permit issuance.

13.0 Recommendations:

This 1st Time Title V application for the facility has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. DAQ the issuance of Air Permit No. 06300T14.