Connecticut Department of

ENERGY & ENVIRONMENTAL PROTECTION

Name Change
From: Firestone Building Products Company, LLC
To: **Holcim Solutions and Products US, LLC**
Date: 10/27/2022

BUREAU OF AIR MANAGEMENT
NEW SOURCE REVIEW PERMIT
TO CONSTRUCT AND OPERATE A STATIONARY SOURCE

Issued pursuant to Title 22a of the Connecticut General Statutes (CGS) and Section 22a-174-3a of the Regulations of Connecticut State Agencies (RCSA).

Owner/Operator	Firestone Building Products Company, LLC
Address	780 James P. Casey Drive, Bristol, CT 06010
Equipment Location	780 James P. Casey Drive, Bristol, CT 06010
Equipment Description	Foam Insulation Board Manufacturing Line
Town-Permit Numbers	026-0045
Premises Number	0019
Stack Number	16
Modification Issue Date	June 18, 2021
Prior Permit Issue Dates	November 25, 1997 (Permit to Construct & Operate) December 6, 2000 (Revision) April 26, 2002 (Minor Modification) March 7, 2005 (Minor Modification) November 30, 2009 (Minor Modification) May 21, 2014 (Minor Modification) February 22, 2017 (Non-Minor Modification) February 2, 2018 (Minor Modification)
Expiration Date	None

for Tracy R. Babbidge
Betsey C. Wingfield
Deputy Commissioner

June 18, 2021
Date

NAME CHANGED TO:
Amrize Building Envelope LLC

79 Elm Street, Hartford, CT 06106-5127
www.ct.gov/deep

Engineer: Olivia Harris Date: 3/27/24

This permit specifies necessary terms and conditions for the operation of this equipment to comply with state and federal air quality standards. The Permittee shall at all times comply with the terms and conditions stated herein.

PART I. DESIGN SPECIFICATIONS

A. General Description

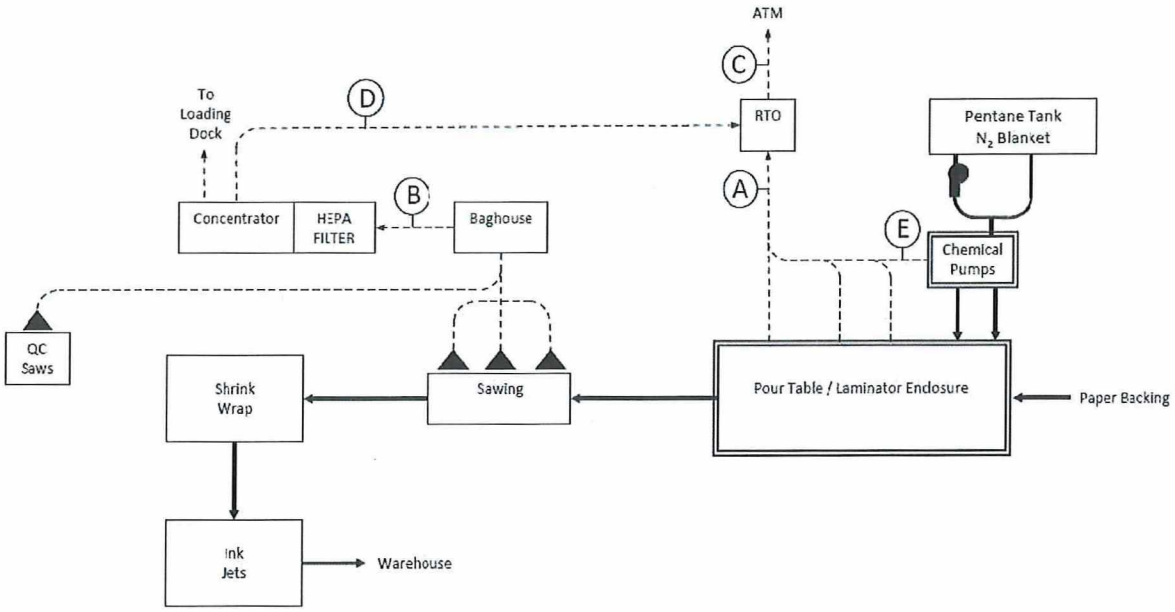
Firestone Building Products Company operates a foam insulation board manufacturing line. The foam insulation board manufacturing line consists of storage tanks for blowing agents and reactant chemicals, various process vessels, a heated conveyor (Pour Table/Laminator), conveyors and trim and crosscut saws. VOC emissions from the laminator are controlled by the regenerative thermal oxidizer (RTO). Particulate emissions from sawing are controlled by a dust collector. The sawing also releases VOC from the foam, which go through the dust collector. The dust collector gases are ducted directly to a zeolite rotary concentrator to remove VOCs. An additional filter media (fabric filter and HEPA filter) polishes the remaining particulate before the concentrator. The concentrated VOCs are ducted to the RTO. The Concentrator clean side exhausts indoors to the building truck loading bay. Dust particles are transferred from the dust collector to the briquetter which compresses the dust particles into small briquettes for disposal.

Side A (Methylene Di-p-phenylene Isocyanate (MDI)) and Side B (blowing agent formulation, polyester polyol, flame retardant, surfactant and amine catalysts) chemicals are combined just before the exit from the laydown nozzle. Multiple streams of the mixture are deposited on the bottom paper backing located on a conveyor. The bottom paper backing is conveyed into the laminator along with the top paper backing. The paper backing is also referred to as "*facer*". The foam expands to fill the space between the paper backings to form a continuous length panel. The thickness of the foam insulation board varies depending on the line speed and laminator settings. Sidewalls along the conveyors force the expanding foam to conform to the width of the paper backing. The continuous sheet is cured in the heated section of the laminator, and then the sides are cut by the edge trim saws and crosscut into 16-foot sections and transferred to a gang saw where they are cut into either 4 or 8 foot segments. The cut boards travel on a conveyor to a station where they are stacked and shrink wrapped. The wrapped boards are then stacked and stored in the finished goods warehouse area pending shipment.

At times, the facility will experiment with alternative chemicals that make up Side A and B formulations for product development and improvement. Trial chemicals will be tracked in accordance with corresponding permit conditions.

The chemicals that make up Side A and Side B formulations are contained in process and storage tanks, all of which are subject to change due to the ongoing product development and improvement.

Figure 1



B. Equipment Design Specifications

1. Maximum Hourly Material Usage:

Foam Board Chemicals		Maximum Usage (lb/hr)
a.	Side A	9,045
b.	Side B	6,625
c.	Total Side A & B:	15,670

C. Control Equipment Design Specifications

1. Baghouse Filter:
   a. Pollutant Controlled: PM
   b. Make & Model No: Flex-Kleen 84 WSTS 169 III
   c. Bag Material: Polyester
   d. Air/Cloth Ratio: 7.48:1
   e. Cleaning Method: Pulses of compressed air
   f. Expected PM_{10} Collection Efficiency: 99.5%
   g. Baghouse is vented to Concentrator wheel, which is protected by a filter system including a HEPA filter with 99.9% removal efficiency by design. (Clean side of baghouse/concentrator exhausts indoors to truck loading bay.)

2. Regenerative Thermal Oxidizer (RTO)/Rotary Concentrator:
   a. Pollutant Controlled: VOC
   b. Make & Model No.: Crawford Equipment Co. 10.0-RTO-95
   c. Fuel Type: Natural Gas
   d. Maximum Firing Rate: 2000 ft^3/hr (2 MMBtu/hr)

D. Stack Parameters

1. Minimum Stack Height (ft): 45

2. Design Exhaust Gas Flow Rate (acfm): 10,000

3. Minimum Stack Exit Temperature (°F): 100

4. Minimum Distance from Stack to Property Line (ft): 500

PART II. OPERATIONAL CONDITIONS

A. Equipment

1. Blowing agent formulation shall not exceed 1,254 pounds per hour and 8% of total foam board chemicals used, based on a 12 consecutive month rolling average. Pentane, acetone or other chemicals may be used in the blowing agent formulation. The emissions from any new compounds, for production or trial runs, shall be counted toward any applicable emissions limit in this permit.

2. Maximum Annual Foam Board Chemicals Used, does not include facer weight: 25,900 tons/consecutive 12 months.

3. Lachenmeir Shrink Wrap:
   a. Fuel Type: Natural Gas

B. Control Equipment

1. RTO/Rotary Concentrator:
   a. Minimum Rotary Concentrator Desorption Flow Temperature (°F): 347
   b. Minimum RTO Combustion Temperature (°F): 1,633 (3-hour block average)
   c. Minimum RTO Combustion Chamber Retention Time: 1 second
   d. Minimum RTO/Concentrator Combined Destruction Efficiency: 90%

C. Pressure Drop Across Baghouse (inches of water): 0.5 – 6.0, readings taken once per shift

D. Minimum Flow Rate between Pour Table/Laminator and RTO (Point A, Figure 1): 2,891scfm (3-hour rolling average)

E. Minimum Flow Rate between Baghouse and Concentrator (Point B, Figure 1): 8,713 scfm (3-hour rolling average)

F. Maximum Natural Draft Openings (NDO) in Pour Table/Laminator: 10.0 ft^2

G. Minimum Pressure Differential of Pour Table/Laminator across NDO's: 0.007" water, readings taken once per shift

H. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.

I. The Permittee shall properly operate the control equipment at all times that this equipment is in operation and emitting air pollutants.

J. The Permittee shall perform maintenance and inspections on the Lachenmeir shrink wrapper as recommended by the manufacturer.

K. The Permittee shall perform maintenance and inspections on the RTO and rotary concentrator as recommended by their respective manufacturers.

PART III. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time.

A. Criteria Pollutants

1. Manufacturing Losses (through RTO/Rotary Concentrator)

Pollutant	lb/hr	tpy
VOC	6.0	9.5

2. Fugitive Losses from Warehouse

Pollutant	tpy
VOC	59.1

3. Natural Gas Combustion Emissions from the RTO

Pollutant	tpy
PM	0.07
PM_{10}	0.07
$PM_{2.5}$	0.07
SO_2	0.005
NOx	0.88
VOC	0.05
CO	0.74

4. Total VOC Emissions

Pollutant	tpy
VOC	68.6*

*Note: Notwithstanding Part II.A.2, total VOC emissions shall not exceed 68.6 tpy.

B. Hazardous Air Pollutants

This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCSA Section 22a-174-29. [STATE ONLY REQUIREMENT]

C. Demonstration of compliance with the above emission limits may be met by calculating the emission rates using mass balance calculations and emission factors from the following sources:

1. Manufacturing VOC losses:
   a. MDI:

      Manufacturing VOC Loss (tons/month) = W x [1 – RTO/Concentrator Combined Destruction Efficiency] / [453.6 g/lb] / [2000 lb/ton]

      Where,
      RTO/Concentrator Combined Destruction Efficiency is as determined by most recent stack test data at the FBPC Bristol, CT facility and calculated in Part III, C.1.b of this permit.

      W = Evaporation loss from the process as calculated according to "MDI/Polymeric MDI Emissions Reporting Guidelines for the Polyurethane Industry", Alliance for the Polyurethane Industries, 2004.

   b. Total Manufacturing and Sawcutting VOC Loss (including emissions from the manufacturing process, baghouse and concentrator):

      Total Manufacturing VOC Loss (lb/hr) = [Total VOC emissions to the control equipment] x [1 – RTO/Concentrator Combined Destruction Efficiency]

      Where,
      VOC emission rates are as determined by the most recent stack test data at the FPBC Bristol, CT facility. The VOC emission rate shall be adjusted by the actual VOC fraction of the blowing agent (i.e. lb VOC/lb blowing agent)

      RTO/Concentrator Combined Destruction Efficiency (DE) as determined by most recent stack test data at the FBPC Bristol, CT facility.

      $DE = 1-\frac{[(C+(B-D))}{(A+B)]} \times 100\%$

      Note: See Figure 1 for sampling locations.

      A = emissions rate measured between the laminator and RTO
      B = emissions rate measured between saw cutting and concentrator
      C = emissions rate measured at outlet of RTO
      D = emissions rate measured between the concentrator and RTO

2. Fugitive VOC losses:
   a. Warehouse VOC Loss:

      VOC Emitted from the Warehouse = [Monthly Average Blowing Agent Release factor (lbs blowing agent/100 lb foam board chemicals used)] x [VOC content of blowing agent (lb VOC/lb blowing agent)] x [total chemicals used (lbs)]/100

      Where, the blowing agent release factor equals:

      i. 0.2075 lb blowing agent/100 lb foam board chemicals used if the Monthly Weighted Average Board Thickness is less than 2", or

      ii. The result of linear interpolation based on the Monthly Weighted Average Board Thickness:

Board Thickness	Blowing Agent Release Emission Factor
2"	0.2075 lb/100 lbs of foam board chemicals used in the production of 2" board produced
3"	0.2956 lb/100 lbs of foam board chemicals used in the production of 3" board produced

b. Fugitive VOC emissions from leaks in transfer lines and process piping: "Fugitive VOC Emissions in the Synthetic Organic Chemical Manufacturing Industry (SOCMI)" (EPA-625/10-8A-004), 12/84.

3. Combustion Emissions from the RTO: Compilation of Air Pollutant Emission Factors (AP-42), 5th edition, Section 1.4, Tables 1.4-1 & 2 Small Boilers less than 100 MMBTU/HR, 7/98.

Sample calculations for each of the above parameters shall be kept on-site and shall be provided to the commissioner upon request.

The commissioner may require other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

1. The Permittee shall operate a continuous monitoring and record keeping system which continuously measures and continuously records the RTO's combustion temperature. The Permittee shall calibrate or replace the thermocouple annually. If the thermocouple does not agree to within one percent (1%) of the reference, the thermocouple shall be replaced.

2. The Permittee shall monitor the hourly material usage for Side A, Side B and blowing agent formulation.

3. The Permittee shall monitor the monthly chemicals used in foam board production. Such records shall include the following:

   a. Total weight of each board thickness produced, and
   b. The total weight of chemicals used in foam board production during the month.

4. The Permittee shall monitor the natural gas usage of the RTO using either fuel purchase receipts or a non-resettable totalizing fuel meter.

5. The Permittee shall continuously monitor the desorption temperature of the rotary concentrator using a computer display.

6. The Permittee shall monitor the pressure drop across the baghouse filter using a manual gauge at least once per shift.

7. The Permittee shall continuously monitor the flow rate from the laminator to the RTO at Point A, Figure 1.

8. The Permittee shall continuously monitor the flow rate from the Baghouse to the Concentrator at Point B, Figure 1.

9. The Permittee shall monitor the pressure differential of Pour Table/Laminator NDOs at least once per shift.

10. The Permittee shall perform inspections of the dust collector as recommended by the manufacturer.

11. The Permittee shall inspect the total enclosure for the laminator, the duct work for the RTO and rotary concentrator for leaks according to the following:

    a. Visual inspection monthly;
    b. Photoionization Detector (PID) inspections quarterly; and
    c. Leaks will be identified as an instrument reading greater than 50 parts per million by volume (as pentane) above background or by visual inspections and shall be repaired as soon as practicable.

B. Record Keeping

1. The Permittee shall keep a record of the hourly, monthly and consecutive 12 month usage and composition of blowing agent formulation, Side A formulation, Side B formulations, and total chemicals used in foam board production, in pounds. The consecutive 12 month material usage shall be determined by adding the current month's usage to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the previous month.

2. The Permittee shall keep a record of the board thickness in inches and the total weight in tons for all chemicals used in foam board production during each calendar month. Such records shall show the dates and times for each period of operation of the laminator.

3. The Permittee shall calculate and record the monthly weighted average board thickness of all foam board produced during the month in inches and the Monthly Blowing Agent release factor in lb/100 lbs of chemicals used. The Permittee shall make these calculations within 30 days of the previous month.

4. The Permittee shall keep records of the percentage of blowing agent formulation to total foam board chemicals used for each production run of foam board.

5. The Permittee shall calculate and record of the monthly and consecutive 12-month emissions of VOC and non-VOC regulated air pollutants in tons from each of the following operations: the laminator (sides A and B) and the warehouse. The consecutive 12-month emissions shall be determined by adding the current month's emissions to that of the previous 11 months. Calculations shall be made in accordance with Part III.C of this permit. The Permittee shall make these records within 30 days of the previous month.

6. The Permittee shall calculate and record the monthly and consecutive 12 month PM, PM_{10}, $PM_{2.5}$, SO_2, NOx, VOC, and CO emissions in units of tons for the RTO. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.

7. The Permittee shall keep material safety data sheets (MSDS) or technical data sheets (TDS) or Safety Data Sheets (SDS) for each chemical used. Such information shall include the quantity and type of each hazardous air pollutant contained in the chemicals used. For paperwork reduction, these sheets may be kept on computer file in electronic form, access to above paperwork requirement may also be allowed via internet on-demand.

8. The Permittee shall keep records of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted from this source including emissions from trial runs using stack parameters from the latest stack test data.

9. The Permittee shall keep records of the annual natural gas usage for the RTO.

10. The Permittee shall continuously record the RTO combustion temperature.

11. The Permittee shall continuously record the desorption temperature of the rotary concentrator.

12. The Permittee shall continuously record the flow rate from the laminator to the RTO.

13. The Permittee shall record the pressure drop across the baghouse at least once per shift.

14. The Permittee shall continuously record the flowrate from the baghouse to the concentrator.

15. The Permittee shall record the pressure differential for the Pour Table/Laminator at least once per shift.

16. The Permittee shall record all maintenance conducted on the baghouse filter and a description of the condition of the filters upon replacement.

17. The Permittee shall record all maintenance and inspections conducted on the Lachenmeir, laminator total enclosure, and duct work to the rotary concentrator/RTO control system. Such records shall contain the date of any maintenance or inspection and any action taken by the Permittee.

18. The Permittee shall keep detailed operation and maintenance records for the RTO, including the time of operation, the date removed from service, the cause for removal from service, the date and description of each service performed, and the date put back into service.

19. The Permittee shall keep detailed records of each RTO thermocouple calibration or replacement, including the date each RTO thermocouple calibration or replacement was performed and the name of the person conducting that task.

20. The Permittee shall keep calibration and maintenance records and electronic recordings for all continuous monitoring instruments and equipment.

21. The Permittee shall keep records of the manufacturer's operation and maintenance requirements for each piece of equipment associated with this process.

22. The Permittee shall keep records of all performance tests required by the commissioner.

23. The Permittee shall keep records of the required monthly and quarterly leak inspections. These records shall include the following:

    a. Type of inspection and PID readings;
    b. Any identified leaks and location; and
    c. Any corrective actions taken.

24. The Permittee shall keep all records required by this permit for a period of no less than five years and shall submit such records to the commissioner upon request.

PART V. STACK EMISSION TEST REQUIREMENTS

Stack emission testing shall be performed in accordance with the Emission Test Guidelines available on the DEEP website at www.ct.gov/deep/stacktesting.

Recurring Stack testing is required for the following within three years of the previous test:

☒ VOC/HC (Stack Emissions at Point C)

☒ Other: RTO/Concentrator Combined Destruction Efficiency (DE)

$$DE = 1-\left[\frac{(C+(B-D))}{(A+B)}\right] \times 100\%$$

Where,

A = emissions rate measured between the laminator and RTO
B = emissions rate measured between saw cutting and concentrator
C = emissions rate measured at outlet of RTO
D = emissions rate measured between the concentrator and RTO

Notes:

a. See Figure 1 for sampling locations.
b. Emissions rate measured at Points A through D shall be in lb/hr

The Permittee shall submit test results within 60 days after completion of testing.

PART VI. SPECIAL REQUIREMENTS

A. STATE ONLY REQUIREMENT: The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA Section 22a-174-23.

B. STATE ONLY REQUIREMENT: The Permittee shall operate this facility at all times in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations as set forth in RCSA Sections 22a-69-1 through 22a-69-7.4, inclusive.

C. The Permittee shall keep all drums and vessels that contain solvents, cleaners, coatings, or cleaning rags covered when not in use, so as to minimize the amounts of VOCs emitted to the atmosphere.

PART VII. ADDITIONAL TERMS AND CONDITIONS

A. This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.

B. Any representative of the DEEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.

C. This permit may be revoked, suspended, modified or transferred in accordance with applicable law.

D. This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected thereby. This permit shall neither create nor affect any rights of persons of municipalities who are not parties to this permit.

E. Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under Section 22a-175 of the Connecticut General Statutes, under Section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."

F. Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.

G. Within 15 days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.

H. The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any

document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.

I. Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Engineering & Enforcement Division; Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.

NSR Engineering Evaluation

CT Department of Energy and Environmental Protection
Bureau of Air Management

Company Name:	Firestone Building Products, LLC	**Permit No.**:	026-0045
Equipment Location:	780 James P. Casey Drive, Bristol, CT 06010	**Date App Received**:	04/22/19; amended 08/03/20; Stack test 11/2020;
Mailing Address:	780 James P. Casey Drive, Bristol, CT 06010	**SIMS No.**:	201905476
Contact Person:	Mr. Clint Baty	**Date Prepared**:	5/1/2019
Contact Title:	Plant Manager	**Prepared By:**	James Grillo
Contact Phone:	860-584-9000	**Single or Multiple Units:**	Single
Contact Email:	batyclint@firestone.com	**Permit Type:**	Minor Mod (prepaid)
Ozone:	serious non-attainment	**Premises Size:**	Major
PM2.5:	attainment	**Equipment Size:**	Major
Equipment Description	Foam Insulation Board Manufacturing Line	**TV/GPLPE Permit No:**	089-0066-TV

Step 1: Complete all the fields above

Step 2: Generate Eval Step 3: Update Fields

Introduction

Reason for Application: Firestone Building Products, LLC "Firestone" submitted a minor modification application for their foam insulation board manufacturing line after performing 40 CFR Part 64 CAM testing on January 9, 2019 that was required by the Title V permit issued on June 6, 2018. The testing indicated that the location where emissions testing, identified in the NSR permit, was not the ideal location for the test point exiting the concentrator and a permit modification is necessary to make this change in the permit. The initial testing also did not produce sufficient data for which a CAM Plan for the Title V permit could be developed, and the testing in Novermber 2020 addresses those requirements as well.

A second round of testing was completed on November 12, 2020 and approved on May 19, 2021. Based on the results of this testing, Firestone is also requesting additional operational changes throughout the permit all of which are discussed below. All the changes and additions to the permit will be part of the yet to be finalized CAM Plan for the non-minor modification to their Title V permit, Application No. 201903026. The revised CAM Plan was submitted on April 27, 2021 and again on May 12, 2021 after Firestone's first review of this NSR permit.

Regulatory Applicability: RCSA §22a-174-2a(e)

Discussion of Modification:
The following changes have been made to the permit based on stack test data from the November 12, 2020 testing:

- There are no changes to emissions due to the proposed modification to the permit.

- In order to determine overall control efficiency of the system, the current permit requires that VOC emissions are measured at the outlet of the concentrator (clean side), which is ducted inside the building. The outlet exhaust gases going to the RTO should have been depicted in the process flow diagram in Part V of the permit to determine actual overall control efficiency. This is the methodology that was used in the January 2019 and November 2020 stack testing. The Stack Test Group approved the testing on May 19, 2021.

  Therefore, the process flow diagram and equation to determine overall control efficiency have been modified accordingly in the permit. The overall destruction efficiency equation in the application is not correct however and the applicant's consultant acknowledged this error. (see electronic mail from S. Hissam to J. Grillo, dated 05/06/19)

- The current permit also requires a determination of the actual RTO destruction efficiency. Since the above change to the overall destruction efficiency equation is being proposed, the RTO destruction is a redundant requirement as all the information required is being recorded during the stack test. Additionally, since the overall destruction efficiency, which was included in the non-minor modification that was issued in February 2018, was the basis for the BACT determination at that time, the RTO destruction efficiency can be removed without a "backsliding" of a previous BACT determination.

- The Rotary Concentrator Desorption Flow Rate Temperature Range has been changed from 300 – 410 to a minimum value of 347 ^{0}F which is 15 ^{0}F below the minimum temperature observed during testing. This methodology is the same as allowed in 40 CFR §63.3167(e)(2), which this source is NOT subject but allows for normal fluctuations in temperature. This monitoring methodology would be acceptable for CAM as the rule was promulgated after November 15, 1990 as allowed by 40 CFR §64.2(b)(i).

- Minimum RTO Combustion Temperature has been changed from 1,400 to 1,633 ^{0}F, which is the minimum temperature observed during testing, along with a 3-hour block average to allow for typical temperature fluctuations

- The permit now includes a minimum pressure differential for the Pour Table/Laminator of 0.007" of water. This value represents at least 200 fpm of face velocity across the natural draft openings to assure that the Pour Table/Laminator is a permanent total enclosure pursuant to EPA Test Method 204. This value will be used in the CAM Plan as an indicator of 100% capture.

- The permit now includes a minimum pressure drop across baghouse which will be used as an indicator for the CAM Plan.

- The permit no includes a minimum flow rate between the RTO and Pour Table/Laminator which will be used as an indicator for the CAM Plan

- The permit now includes a Minimum Flow Rate Between Baghouse and Concentrator of 8,713 scfm. This represents the minimum flow rate required to achieve an assumed 99.5 % capture of VOC at the sawing operation. This is based on the premise that VOC is lighter than the particulate generated at the saw and that during the testing 99.42 of the particulate was captured in the baghouse. The capture efficiency is not considered an enforceable condition as it is only used to calculate the *Overall Destruction Efficiency* for the entire control system which includes the laminator/sawing capture, concentrator, and RTO.

- Requirement that the Maximum Combined Total Area of Natural Draft Openings (NDO) in the Laminator be no greater than 10 ft^2. The applicant has requested this requirement as a means of assuring that the maximum amount of emissions are captured and transported to the RTO for destruction. In accordance with EPA reference test methods, a velocity through the natural draft opening into the laminator/pour table room of 200 fpm or greater is indicative of 100% capture of the emissions coming off the laminator and pour table, rather than some of those fugitive emissions escaping through the NDOs. Based on the proposed maximum total area of NDOs, a flowrate equal to or greaer than 2,891 scfm created by the induction fan drawing air from the laminator/pour into the RTO assures a air velocity across the face of the NDOs that exceeds 200 fpm (i.e. 2,891 cfm/10 square feet => 200 fpm) and capture of the maximum amount of VOC emissions from the process.

  During the most recent round of emissions testing, the facility achieved air velocities much higher than 200 fpm based on a flowrate of 5,246 scfm and 4.92 ft2 of NDO openings. The average actual flow rate during testing was 5,246 scfm (Point A, Figure 1). The average chemical pump enclosure flow rate was 391 scfm (Point E). The air flow from the laminator during the testing was 4,855 scfm and the total open area of the NDOs at the time of the test was 4.92 ft2. The calculated average face velocity achieved during the test was 986 fpm, which is much higher than the 200 fpm required to achieve 100% capture according to EPA Reference Method 204. With the proposed NDO minimum face velocity of 250 fpm, the required flow rate from the laminator only needs to be 2,500 scfm. The additional 391 scfm from the pump enclosure needs to be included to ensure total capture. Therefore, a minimum flow rate measured at Point of 2,891 scfm and a maximum total NDO area of 10 ft^2 assures the room serves as a permanent total enclosure capturing VOC emissions from the laminato/pour table area.

- Requirement that the Pressure Drop Across the Baghouse be maintained between 0.5 and 6.0 inches of water. This operational limit will be required as part of the CAM Plan as a second indicator of VOC capture at the sawing operation.

- Additional monitoring and record keeping for all parameter requirements discussed above.

- Changed the inspection requirement on the control devices to include monthly visual inspections and quarterly PID inspections.

Emissions Change from Modification/Revision

No Expected changes in emissions due to this modification.

Ambient Air Quality Impact Analysis (Attachment L of NSR Application)

Not Applicable

Permit Fee(s) (Double Click to edit)

Equipment Size	◉ Major	○ Minor
Permit Type	Minor Permit Mod	
Permit Fee	$3,250	ea.
Municipality	☐ Yes	
# of Permits/Applications	1	$3,250
Application Fee Submitted	☑ Yes	-$940
Was Permit Fee paid with Application Fee?	☑ Yes	-2310
Additional Application Fees ($1750 Each)		
	Quantity	
BACT Review	0	$0
LAER Review	0	$0
Money Owed		**$0**

Compliance History Review

Was the SIMS Enforcement Report run and reviewed for this applicant?	Yes
Were other bureaus contacted to resolve any outstanding enforcement actions shown in the SIMS Report?	No
What is the date on the Enforcement Section's review of air compliance email?	6/10/2021
Was the compliance record reviewed in accordance with the Environmental Compliance History Policy?	Yes

Recommendation

The applicant is agreeable with the proposed changes to the permit (see electronic mail from Sherri MacWilliams dated 06/07/21) and since the applicant submitted the entire permit fee with the application, the permit can be issued as final at this time.

Based on the information submitted by the applicant, this engineering evaluation and the compliance history review, the granting of a permit is recommended for Firestone Building Building Products, LLC.

/s/James Grillo
James Grillo
APCE

06/10/2021
Date

Approvals

/s/ Louis J. Corsino III	6/16/2021
Louis J. Corsino III Supervising APCE	Date
	06/18/2021
Jaimeson Sinclair Director	Date