GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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NARRATIVE

TO: Kirk Drucker

FROM: Ginger Payment

DATE: November 5, 2019

Facility Name:	**American Building Supply, Inc.**
AIRS No.:	121-00853
Location:	Union City, GA (Fulton County)
Application #:	27220
Date of Application:	October 16, 2019

Background Information

American Building Supply, Inc. is an existing door manufacturing facility located at 4475 South Fulton Parkway, Building 6 in Union City (Fulton County). The facility was issued a synthetic minor permit, Permit No. 2431-121-0853-S-02-0, on December 18, 2018 for the installation of a new paint booth and a baghouse. The permit included a 25 tpy limit of VOC emissions for the facility to avoid Georgia Rule (tt) - *VOC Emissions from Major Sources*.

The main sources of VOC emissions are the automatic spray-painting machine (used for painting doors) and the spray-paint booth (used for hand painting miscellaneous parts). Additional manufacturing equipment, paint booths and a baghouse were permitted in December 2018 as part of a plant expansion of production for wooden doors and windows.

Purpose of Application

Application No. 27220 was submitted on September 3, 2019 and received on September 11, 2019 to request the construction and operation of additional manufacturing equipment and a foam injection line. A RACT analysis was conducted for a VOC emission increase from 25 tpy to 70 tpy. A public advisory (PA0919-3) was issued on September 16, 2019 and expired on October 18, 2019.

A public Notice was issued for this application and expired DATE?.

Updated Equipment List

Emission Units			Associated Control Devices	
Source Code	**Description**	**Installation Date**	**Source Code**	**Description**
SL1	Automatic Flat Line Spray Machine – 5000 CFM Exhaust	2007	CD1	Fabric Filter
SB1	Spray Paint Booth	2007	CD2	Fabric Filter
WW1	Woodworking	2007	BH1	Baghouse
LUP	Adhesive Layup Line	Various	-	-
PF1	Pre Finishing Line	2018	CD3	Fabric Filter
PFS	Pre Finish Stain Booth	2018	CD4	Fabric Filter
WW2	Woodworking	2018	BH2	Baghouse
OLB	Off-Line Paint Booth	2018	CD5	Fabric Filter
FOAM*	Foam Injection	2019	-	-

*proposed within current application

Storage Tanks

Source Code	Capacity (gallons)	Contents	Installation Date	True Vapor Pressure (psia)
T1*	12,000	Pentane Mixture Tank	2019	11.17
T2*	10,500	Isocyanate Tank	2019	1.45E-7
T3*	10,500	Isocyanate Tank	2019	1.45E-7
T4*	10,500	Polyol Tank	2019	Unknown

*proposed within current application

Fuel Burning Equipment

Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date
BLR1	1.5	Patterson-Kelley 50 Hp natural gas boiler	2018	2018

Emissions Summary

Potential emissions from Boiler BLR1 (1.5 MMBtu/hr) were calculated using the burner heat capacity and AP-42 Emission Factors from Chapter 1.4 for natural gas combustion.

Emissions from painting are based on the SDS of each paint used and paint usage per door.

Emissions from adhesive/glue usage are based on the SDS of each paint used and the average adhesive/glue usage based on rates at similar facilities. The potential usage rate is based on the actual projected usage.

Emissions from foam were calculated using the vendor data for the content of the Part A and Part B of the foam. The VOC emissions from the blowing agent were assumed to be released at a rate of 5% until testing is conducted.

Facility-Wide Emissions
(in tons per year)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
$PM/PM_{10}/PM_{2.5}$	18.0	19.4	1.4	18.0	19.4	1.4
NOx	0.6	0.6	--	0.6	0.6	--
SO_2	$3.9E^{-3}$	$3.9E^{-3}$	--	$3.9E^{-3}$	$3.9E^{-3}$	--
CO	0.5	0.5	--	0.5	0.5	--
VOC	24.9	70	45.1	24.9	70	45.1
Max. Individual HAP	1.5	1.5	--	1.5	1.5	--
Total HAP	2.3	7.4	5.1	2.3	7.4	5.1

Regulatory Applicability

The facility will continue to be subject to Georgia Rule (b) – *Visible Emissions* and Georgia Rule (e) – *Particulate Emission from Manufacturing Processes*. The proposed equipment will be included in the existing conditions.

The boiler will continue to be subject to Georgia Rule (d) – *Emissions from Fuel-Burning Equipment*.

Fugitive emission from all sources will continue to be limited to 20% by Georgia Rule (n) – *Fugitive Dust*.

Georgia Rule (ii) - *VOC emissions from surface coating of miscellaneous metal parts and products* does not apply because the SIC code for the facility is not one of the targeted SIC codes. Also, the facility does not manufacture metal doors.

Because the facility does not use any coatings that contain the targeted HAP or use methylene chloride as a stripper, it is not subject to 40 CFR 63 Subpart 6H - *NESHAP: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources*.

Because the facility-wide VOC emissions will be greater than 25 tons per year, the facility will become subject to Georgia Rule (tt) - *VOC Emissions from Major Sources* and a RACT (Reasonably Available Control Technology) analysis is required to be conducted. The following is the RACT analysis

RACT Review for VOC

The four major activities at American Building Supply, Inc. that have the potential to emit VOC are adhesive/glue usage, coating and cleaner usage, foam usage and natural gas combustion.

1. Adhesive/Glue Usage

   VOC emissions from adhesive/glue usage are based on the SDS of each adhesive/glue used and the average adhesive/glue usage based on rates at similar facilities. The potential usage rate is based on the actual projected usage.

2. Coating (non-adhesive/glue) and Cleaner Usage

   Coating and cleaning VOC emissions are based on the SDS of each coating/cleaner used and coating/cleaner usage per door. Potential VOC emissions are based on a maximum production rate for 7,215,378 doors per year.

3. Door Foam Operation

   VOC emissions from foam were calculated using the vendor data for the content of the Part A and Part B of the foam. The VOC emissions from the blowing agent were assumed to be released at a rate of 5% until testing is conducted. This results in an emission rate of 0.3 pounds of VOC per 100 pounds of foam material (Part A, Part B and Blowing Agent) processed.

4. Natural Gas Combustion

   Potential VOC emissions from Boiler BLR1 (1.5 MMBtu/hr) were calculated using the burner heat capacities and AP-42 Emission Factors from Chapter 1.4 for natural gas combustion.

Identify Product Alternative

1. Adhesive/Glue Usage

   No alternative products have been identified to replace the adhesives/glues. The facility is currently using adhesives/glues with low VOC content.

2. Coating (non-adhesive/glue) and Cleaner Usage

   No alternative products have been identified to replace the coatings or cleaners. The majority of the coatings and cleaners used at the facility have a very low VOC content.

3. Door Foam Operation

   No alternative products have been identified to replace the foam. The main two parts of the foam currently have low VOC content. Significant amounts of the blowing agent remain in the blown foam.

4. Natural Gas Combustion

   There are negligible emissions from natural gas combustion and no alternative products.

Identify Technological Alternatives

American Building Supply, Inc. evaluated RACT by determining what process changes and add-on emission controls are technically feasible for the specific type of equipment. Potential emission reduction options were determined from EPA's RACT/BACT/LAER (RBLC) Clearinghouse and other research.

There was no matching RBLC facilities for the control of VOC from Flat Paneling Surface Coating.

There was no matching RBLC facilities for the control of pentane from Polyurethane Foam Products Manufacturing.

The control of VOC from Polyurethane Foam Products Manufacturing from similar RBLC facilities were the following:

- Good management and work practices / Emission limitation of 90 tpy
- Best management practices and continued exploration of non-VOC containing materials
- Management and work practices along with proper maintenance of operating system

The control of VOC from Miscellaneous Metal Parts and Products Surface Coating (Steel Doors) from similar RBLC facilities were the following:

- VOC emissions limited to 60 tpy
- Each extreme performance coating not to exceed 3.65 lbs VOC/gallon (excluding water and exempt solvents), as applied.

The following control technologies are considered to be technologically feasible:

1. Regenerative Thermal Oxidizer
2. Emission Limits
3. Good Management Practices

Technical Feasibility Determination

1. Regenerative Thermal Oxidizer

   A regenerative thermal oxidizer (RTO) uses a high-density packed heat transfer media, typically ceramic random saddle packing or honeycomb monolith structures, to preheat incoming waste gas streams and to achieve 85 to 95% heat recovery. The RTO consists of at least two modules that are cycled between inlet and outlet service to maintain appropriate operating temperatures and to

conserve as much thermal energy as possible. The high level of heat integration offered by RTOs is particularly suited for high flow rate and low VOC concentration waste gas streams that do not vary in composition or flow rate over time. When necessary, the feed gas stream in an RTO can also be further heated to the oxidizer's operating temperatures (1,400 to 2,000 °F) through supplemental fuel combustion. RTOs have been used effectively in applications where the inlet VOC concentration is as low as 100 ppmv, and, therefore, they are the preferred oxidizer design for low VOC concentration exhaust stream. U.S. EPA expects that an RTO can achieve a destruction/removal efficiency of greater than 95% depending on the system's requirements and the characteristics of the contaminated stream.

Based on the total annualized cost (capital recovery cost and total annual cost of O&M) and the VOC units removed (control efficiency of 95% and control device loading rate), the projected cost effectiveness of an RTO to control emissions from the Finishing Line (highest source of emissions) is $21,039.

2. Emission Limits (Annual, Quarterly, Hourly)

The facility is proposing to limit emissions to less than 70 tons of VOC during any 12-month period.

The adhesives and glue will be limited to an annual average of 0.5% VOC by weight, as applied, during any consecutive twelve-month period. The facility is not subject to Georgia Rule (jj) - *VOC Emissions from Surface Coating of Flat Wood Paneling* because doors are not considered flat wood paneling by definition. However, the proposed RACT limit for the adhesives and glues is well below the allowable VOC content specified in this comparable RACT rule.

The coatings (non-adhesives/non-glue) and cleaners will be limited to an annual average of 0.3 lbs/gallons, as applied, during any consecutive twelve-month period. The facility is not subject to Georgia Rule (jj) - *VOC Emissions from Surface Coating of Flat Wood Paneling* because doors are not considered flat wood paneling by definition. However, the proposed RACT limit for the coatings and cleaners is well below the allowable VOC content specified in this comparable RACT rule. The proposed limit allows for rounding of the VOC contents.

The VOC emissions from the foam will be limited to 0.3 lbs per 100 lbs raw material processed during any month. The facility is not subject to Georgia Rule (qqq) - *VOC Emissions from Extruded Polystyrene Products Manufacturing Utilizing a Blowing Agent* because the foam is blown into the doors. However, the proposed RACT limit for the foam would comply with this comparable RACT rule. The proposed limit allows for rounding of the VOC emissions.

3. Good Management Practices

The use of good management practices at the facility will be to minimize spills and evaporation of VOC-containing cleaning solutions and proper storage of cleaning materials.

Selection of VOC RACT

The cost of the RTO would exceed the benefit of VOC reduction. Therefore, RACT for the facility is determined to be:

- Emission Limits
- Good Management Practices

Permit Conditions

- Condition 2.1 was modified to change the VOC emission limit for the facilty from 25 tpy to 70 tpy and is based on the RACT analysis.
- Condition 2.6 is a new condition which limits the VOC content of the adhesives and glues as determined in the RACT analysis.
- Condition 2.7 is a new condition which limits the VOC content of the coatings (non-adhesives/non-glue) and cleaners as determined in the RACT analysis.
- Condition 2.8 is a new condition which limits the VOC emissions from the foam materials usage as determined in the RACT analysis.
- Condition 3.2 is a new condition which requires the facility will be to minimize spills and evaporation of VOC-containing cleaning solutions and proper storage of cleaning materials
- Condition 6.2 is a new condition which requires testing to determine the VOC emissions factor from the door foam operation.
- Condition 7.1 was modified to change the monthly reporting to 5.8 tons of VOC during any month. It was also modified to include a calculation for total VOC emissions.
- Condition 7.2 was modified to change the notification to 70 tpy.
- Condition 7.5 is a new condition which requires the facility to maintain records of the VOC content (percent by weight) of the adhesives and glues, as applied, and to calculate the 12-month rolling totals of the VOC content. The facility is required to notify the Division if any 12-month total exceeds 0.5% by weight as applied.
- Condition 7.6 is a new condition which requires the facility to maintain records of the VOC content (pounds per gallon) of all coatings (non-adhesives/non-glue) and cleaners, as applied, and to calculate the 12-month rolling totals of the VOC content. The facility is required to notify the Division if any 12-month total exceeds 0.3 pounds per gallon as applied.

Toxic Impact Assessment

The potential emission rates for the toxic air pollutants do not exceed the MERs (Maximum Emission Rates) in EPD's Toxic Impact Assessment guidance document. Therefore, modeling of the ambient impacts of the Toxic Air Pollutants is not required.

Summary & Recommendations

I recommend issuance of Permit Amendment No. 2431-121-0853-S-02-1 to American Building Supply, Inc. which is located at 4475 South Fulton Parkway, Building 6 in Union City (Fulton County). This permit amendment allows for the construction and operation of additional manufacturing equipment and a foam injection line and increase the VOC emission limit from 25 tpy to 70 tpy based on a RACT analysis. The SSCP will continue to be responsible for compliance and inspection of this facility. A Public Notice was issued for this application on DATE in the Fulton County Daily Report and expired DATE.