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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-2571M
Plant ID No.: 031-00030
Applicant: American Woodmark Corporation (AWC)
Facility Name: South Branch
Location: Hardy County
SIC Code: 2434
NAICS Code: 337110
Application Type: Modification
Received Date: February 6, 2015
Engineer Assigned: Joe Kessler
Fee Amount: \$3,500
Date Received: \$1,000 (2/10/15), \$2,500 (3/30/15)
Complete Date: April 13, 2015
Due Date: July 12, 2015
Applicant Ad Date: February 18, 2015
Newspaper: The Moorefield Examiner
UTM's: Easting: 677.730 km Northing: 4,327.129 km Zone: 17
Latitude/Longitude: 39.07518, -78.94541
Description: Proposed addition of: one (1) woodworking operation (with 21 woodworking machines and two (2) baghouses) and one (1) new finishing line (with 23 finishing machines, one (1) baghouse, and one (1) regenerative thermal oxidizer (RTO)). Proposed increase in throughputs of water-solvent recovery still and manual spray booth.

American Woodmark Corporation's (AWC) South Branch facility was originally permitted in 2004 and has been the subject of many permitting actions since. The following table provides a brief description of each of the previous actions:

Table 1: Previous Permitting Actions - South Branch

Table with 3 columns: Permit #, Date Issued, Description. Row 1: R13-2571, 5/24/2004, Construction Permit for original cabinet component manufacturing facility. Row 2: R13-2571A, 8/02/2004, Addition of surface coating operations, controlled by two (2) Regenerative Thermal Oxidizers and two (2) baghouses. This permit modification also established the

Permit #	Date Issued	Description
		facility as a Synthetic Minor Source for Volatile Organic Compound (VOC) emissions.
R13-2571B	11/15/2005	Class II Administrative Update (A/U) for the installation of a 1.22 mmBtu/hr natural gas-fired boiler.
R13-2571C	6/29/2006	Class II A/U for the installation of a fire pump, modification to boiler (B1) fuel usage, addition of storage tanks, and various administrative updates.
R13-2571D	11/08/2006	Class II A/U for an increase in size of Boiler B2 from 300 hp to 500 hp and making numerous changes to existing permit requirements.
R13-2571E	2/13/2007	Class I A/U to remove limits on insignificant emissions units and clarify language in other conditions.
R13-2571F	5/21/2007	Class II A/U for the installation of tanks in the pump room.
R13-2571G	8/23/2007	Class II A/U to for conversion of a test spray booth to a production booth.
R13-2571H	12/07/2007	Class II A/U for the installation of a sawdust hopper and auger.
R13-2571I	8/12/2008	Application Withdrawn.
R13-2571J	12/02/2008	Class II A/U for the installation of two spray paint booths and changes to the existing permit limits from the UV Ovens.
R13-2571K	2/18/2010	Class I A/U for wording changes in several requirements.
R13-2571L	12/18/2012	Modification permit to install a new woodworking operation consisting of twenty (20) woodworking machines, two (2) baghouses, and a waste-solvent recovery still.

## **DESCRIPTION OF EXISTING PROCESS/MODIFICATIONS**

### ***Existing Facility***

AWC's existing South Branch Plant is a cabinet component manufacturing facility. The facility manufactures and finishes wood doors and frames for shipment to other AWC facilities for final assembly into finished kitchen and vanity cabinets. The primary operations are the dimensioning of kiln-dried wood, assembly of parts to create either doors or frames, and finishing of doors, frames and miscellaneous parts. The existing facility consists of multiple woodworking operations controlled by baghouses, wood-fired and natural gas-fired boilers, surface coating operations controlled by RTOs, and other ancillary support operations.

### ***Proposed Modifications***

AWC is now proposing to add: one (1) new woodworking line and one (1) new finishing line. Additionally, AWC is proposing to increase the throughputs of the existing water-solvent recovery still and the manual spray booth.

### **New Woodworking Line**

The new woodworking line consists of 21 woodworking machines and two (2) new 54,000 acfm baghouses (BH9 and BH10). The woodworking units include saws, sanders, drills, moulders, planers, and various other machines. Saw dust produced from the new woodworking emissions shall be captured and directed to either the existing baghouses BH7 and BH8 or the two new baghouses for control. AWC has stated that the baghouses will have a maximum outlet grain loading not to exceed 0.01 gr/acfm (effectively a capture efficiency of 99.90%).

### New Finishing Operation

The new finishing operation consists of 23 finishing machines, one (1) new 54,000 acfm baghouse (BH11), and one (1) new regenerative thermal oxidizer (RTO3). The finishing machines include ovens, spray machines, sanders, and various other machines. VOC and Hazardous Air Pollutants (HAP) emissions from use of surface coatings, solvents, cleaners, etc. shall be captured (using negative pressure duct work and hoods) and evacuated to the RTOs for combustion (all finishing equipment is vented to a header where it may be controlled by any of the three (3) RTOs depending on operating needs). The capture system has a minimum efficiency of 92% and RTOs have a minimum combustion efficiency of 95%. This results in an overall system control efficiency of 87.4%. It is estimated that the overall control efficiency is much higher than this number, and AWC plans to test the system in the future to establish what is the actual site-specific overall control efficiency.

The new finishing line also includes several woodworking machines that are controlled by a new baghouse (BH11). As with the new woodworking baghouses, BH11 will have a maximum outlet grain loading not to exceed 0.01 gr/acfm (effectively a capture efficiency of 99.90%).

### Water-Solvent Recovery Still

AWC is proposing to increase the throughput from 1.71 gallons/hour to 5.13 gallons/hour of the waste-solvent recovery still (PR-SS2) that recycles and recovers solvents used to clean the spray booths and associated equipment using a Xylene (a HAP) cleaner. This will result in an annual increase in throughput from 14,981 gallons/year to 44,940 gallons/year. The still is a closed system with fugitive emissions only resulting from opening the unit for cleaning purposes (estimated to be 5% of total throughput).

### Manual Spray Booth

AWC is proposing to change the usage of the manual spray booth (VOC-TB1) from doing touch-ups and repairs to being part of the manufacturing process. As a result, AWC is requesting an increase in the throughput of the spray booth. VOC/HAP emissions from use of surface coatings, solvents, cleaners, etc. in the spray booth shall be captured and evacuated to the RTOs for combustion. The capture system has a minimum efficiency of 92% and RTOs have a minimum combustion efficiency of 95%. This results in an overall system control efficiency of 87.4%.

## **SITE INSPECTION**

Due to the nature of the modification, the writer did not conduct a site inspection for this permitting action. According to information in the DAQ database, the last full on-site inspection occurred on May 31, 2012 by Mr. Karl Dettinger of the Compliance/Enforcement Section. The facility was given a status code of “30 - In Compliance” as a result of the inspection.

## AIR EMISSIONS AND CALCULATION METHODOLOGIES

AWC included in the permit application an estimate of the potential increase in emissions for each of the proposed modifications. The methodology of each calculation is discussed below.

### ***Baghouses - New Woodworking Line***

As stated above, all emission units associated with the new woodworking line shall be captured and directed to either the existing baghouses BH7 (E17) and BH8 (E18) or the two new baghouses BH9 (E19) and BH10 (E20) for control. The emissions from the new baghouses are based on a maximum outlet grain loading not to exceed 0.01 gr/acfm and a maximum air flow rate of 54,000 acfm. Using this outlet grain loading and maximum air flow, BH9 and BH10 will each have the potential to emit 4.63 lbs/hr and 20.27 tons/year of particulate matter. For the purposes of this calculation, all particulate matter emissions are assumed to PM<sub>2.5</sub> or less.

### ***New Finishing Operation***

The new finishing operation consists of 23 finishing machines, one (1) new 54,000 acfm baghouse (E22), and one (1) new RTO (E22). The finishing machines include ovens, spray machines, sanders, and various other machines. VOC/HAP emissions from use of surface coatings, solvents, cleaners, etc. shall be captured (using negative pressure duct work and hoods) and evacuated to the RTOs for combustion. The capture system has a minimum efficiency of 92% and RTOs have a minimum combustion efficiency of 95%. This results in an overall system control efficiency of 87.4%. It is estimated that the overall control efficiency is much higher than this number, and AWC plans to test the system in the future to establish what is the actual site-specific overall control efficiency. Based on the maximum usages of the stains and cleaners on the line and using a mass balance calculation (using VOC/HAP concentrations of the materials applied), AWC estimated that the uncontrolled VOC emissions of the new finishing line (not including the annual spray booth) at maximum production would be 335.83 lbs/hr and 1,470.95 tons/year (61.16 lbs/hr and 267.86 tons/year of HAPs). However, the controlled (@ 87.4%) emission rate of the line at maximum production would be 42.31 lbs/hr and 185.34 tons/year (7.71 lbs/hr and 33.75 tons/year of HAPs). The VOC emissions are detailed in the following table:

**Table 2: Maximum VOC Emissions From New Finishing Line**

Uncontrolled Emissions		Uncaptured Emissions (8%)		Captured & Sent to RTOs (92%)		Pass-Through from RTOs (4.6%)		Overall Controlled Emissions (87.4%)	
lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
335.83	1,470.95	26.87	117.68	308.96	1,353.27	15.45	67.66	42.31	185.34

The new baghouse will be used to capture saw dust produced from the woodworking machines associated with the new finishing line. As with the new woodworking baghouses, BH11 will have a maximum outlet grain loading not to exceed 0.01 gr/acfm (effectively a capture efficiency of 99.90%). Using this outlet grain loading and the maximum air flow of 54,000 acfm, BH11 have the potential to emit 4.63 lbs/hr and 20.27 tons/year.

The application of stains will also result in potential particular matter emissions from overspray (solids in the stains that do not stick to the substrate). AWC has estimated the uncontrolled emissions from overspray at 75% of the solids content of the stains used in the new finishing line. The overspray is collected in the vent hoods and sent through dry filters to remove a minimum of 99.9% of the particulate matter prior to the exhaust being sent further to the RTOs.

***Waste-Solvent Recovery Still***

AWC calculated the potential fugitive emissions (the still is a closed system with no direct emissions to the atmosphere) based on a total a maximum Xylene solvent - the worst-case solvent used in the cleaning operations - throughput of 3.42 gallons/hour and operation of the still 8,760 hours/year. AWC further estimated that, although a closed system, the still would have the potential to emit fugitive emissions when opening the still for cleaning or maintenance purposes. They estimated that up to 5% of the solvent could be lost through fugitive emissions. Based on the above methodology and an Xylene solvent specific gravity of 0.86, AWC calculated an Xylene/VOC PTE from the use of the solvent still of 1.23 lb/hr and 5.37 tons/yr. Xylene is defined as a Hazardous Air Pollutant (HAP) under Section 112(b) of the Clean Air Act (CAA).

***Manual Spray Booth***

With the proposed modification, the manual spray booth will go from doing touch-ups and repairs to being part of the manufacturing process. As a result, AWC is requesting an increase in the throughput of the spray booth. VOC emissions from use of surface coatings, solvents, cleaners, etc. in the spray booth shall be captured and evacuated to the RTOs for combustion (no HAPs are expected to be used in the manual spray booth). Uncontrolled emissions from the manual spray booth are based on the maximum usages of the stains used and using a mass balance calculation. The capture system has a minimum efficiency of 92% and RTOs have a minimum combustion efficiency of 95%. This results in an overall system control efficiency of 87.4%. AWC estimated that the uncontrolled emissions of the revised manual spray booth at maximum production would be 67.76 lbs/hr and 296.79 tons/year (61.16 lbs/hr and 267.86 tons/year of HAPs). However, the controlled (@ 87.4%) emission rate of the line at maximum production would be 8.54 lbs/hr and 37.40 tons/year. This is detailed in the following table:

**Table 3: Maximum VOC Emissions From Manual Spray Booth**

Uncontrolled Emissions		Uncaptured Emissions (8%)		Captured & Sent to RTOs (92%)		Pass-Through from RTOs (4.6%)		Overall Controlled Emissions (87.4%)	
lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
67.76	296.79	5.42	23.74	62.34	273.05	3.12	13.65	8.54	37.40

The application of stains will also result in potential particular matter emissions from overspray

(solids in the stains that do not stick to the substrate). AWC has estimated the uncontrolled emissions from overspray at 75% of the solids content of the stains used in the modified manual spray booth. The overspray is collected in the vent hoods and sent through dry filters to remove a minimum of 99.9% of the particulate matter prior to the exhaust being sent further to the RTOs.

### ***RTO3 Combustion Exhaust Emissions***

The new RTO3 (E22) has the potential to emit products of combustion from the combustion of natural gas in the burners. AWC calculated the potential emissions from the natural gas burners based on emission factors provided for natural gas combustion as given in AP-42 (AP-42 is a database of emission factors maintained by USEPA) Section 1.4. Hourly emissions were based on the maximum design heat input (MDHI) of the burners (12.4 mmBtu/hr) and annual emissions were based on the RTO operating 8,760 hours per year. A natural gas heat content of 1,000 Btu/scf was used in the calculations.

In addition to the above, there is some expectation of additional CO and NO<sub>x</sub> forming in the firebox from the oxidation of carbon in the VOCs and the formation of thermal NO<sub>x</sub>. However, there are no reliable emission factors to model these emissions. The previous permitting of the existing RTOs did not address these potential emissions. AWC did not address these emissions in the application. The writer has conservatively estimated these emissions using the following method:

Solvent combustion by-products have been estimated by modeling solvent combustion as propane combustion and applying AP-42 emission factors. The estimated amount of solvent to be sent to the RTO (as calculated from the total uncontrolled VOCs sent to the RTOs for destruction) was converted from pounds to BTUs based on the heat of combustion of liquid isopropanol as a worst case. The BTU value obtained was divided by 91.5 mmBtu/10<sup>3</sup> gallons to model the solvent as propane and multiplied by the AP-42 Section 1.5 emission factors. Solvent combustion estimates take in to account the total volume of solvent, and it incorporate a safety factor of five. Aggregate hourly solvent load to all RTOs is estimated to be 825 lbs/hr (based on the back-calculated hourly uncontrolled mass of VOCs sent to the RTOs for destruction - assumes 100% of VOCs captured and sent to RTO to be conservative - see 4.1.17). The hourly emission calculation (NO<sub>x</sub>) of the RTOs from solvent combustion is given below as an example:

**Eq. 1:** 
$$E_{RTO} (\text{lb-NO}_x/\text{hr}) = \left[ \left[ \left[ \text{Solvent Load to RTO (lbs/hour)} \right] * \left[ \text{Isopropanol Heat of Combustion (mmBtu/gal)} \right] \right] / \left[ \text{Propane Heat of Combustion (mmBtu/1000 gal)} \right] * \left[ \text{AP-42 Section 1.5 Propane NO}_x \text{ Emission Factor (lb-NO}_x/10^3 \text{ gal-Propane)} \right] * \left[ \text{Safety Factor (500\%)} \right] \right]$$

$$E_{RTO} (\text{lb-NO}_x/\text{hr}) = \left[ \left[ \left[ 825 \text{ lbs-solvent/hour} \right] * \left[ 0.01575 \text{ mmBtu/lb-Isopropanol} \right] \right] / \left[ 91.5 \text{ mmBtu/1,000 gal-Propane} \right] * \left[ 13 \text{ lb-NO}_x/10^3 \text{ gal-Propane} \right] * \left[ 5 \right] \right]$$

$$E_{RTO} (\text{lb-NO}_x/\text{hr}) = 9.22 \text{ lbs-NO}_x/\text{hour}$$

Based on the above calculation methodology, the total aggregate emissions of CO and NO<sub>x</sub> formed from the combustion of hydrocarbons in all the RTOs would be: NO<sub>x</sub> - 9.22 lb/hr and 19.23 tons/year; CO - 5.33 lbs/hour and 11.1 tons/year. Annual emissions were based the back-calculated annual uncontrolled mass of VOCs sent to the RTOs for destruction - see 4.1.17 of the draft permit.

### ***Emissions Summary***

Specific requirement 4.1.26 (established under R13-2571A) sets a facility-wide annual VOC emission limit of 249.4 tons. As this limit will remain in the draft permit, the potential-to-emit (PTE) increase of VOCs from the proposed modifications will be zero on a facility-wide basis. However, there is an expectation that there will be an increases in the actual VOC emissions of the facility. Based on the most recent Certified Emissions Statement (CES) data (2014), the South Branch facility emitted 117.38 tons/year of VOCs. This number is expected to increase significantly with the addition of the new finishing line. The total VOC emissions estimated to be potentially emitted from the proposed modifications themselves is estimated to be 228.5 tons/year.

The increase in annual PTE from the proposed modifications are given in the following table:

**Table 4: Increase in Facility-Wide Annual PTE Summary (tons/yr)**

Source	CO	NO <sub>x</sub>	PM <sup>(1)</sup>	SO <sub>2</sub>	VOCs	HAPs
New Woodworking Operations	0.00	0.00	60.82	0.00	0.00	0.00
New Finishing Line 3	0.00	0.00	0.08	0.00	0.00	25.15
Manual Spray Booth Increase	0.00	0.00	~0.00	0.00	0.00	0.00
Waste-Solvent Recovery Increase	0.00	0.00	0.00	0.00	0.00	2.68
RTO3 Combustion Exhaust	15.66	24.66	0.39	~0.00	0.00	~0.00
<b>Modification Totals →</b>	<b>15.66</b>	<b>24.66</b>	<b>61.29</b>	<b>0.00</b>	<b>0.00<sup>(2)</sup></b>	<b>27.83</b>

- (1) Conservatively, all particulate matter emissions are assumed to be less than 2.5 microns. Includes condensables.
- (2) As the South Branch Plant has a facility-wide VOC limit of 249.4 TPY that will not change as a result of the proposed modifications, there is no increase in VOC PTE from the modifications.

The new facility-wide annual PTE is given in the following table:

**Table 5: Post-Modification Facility-Wide Annual PTE Summary (tons/yr)**

Source	CO	NO <sub>x</sub>	PM <sup>(1)</sup>	SO <sub>2</sub>	VOCs	HAPs
From Title V Fact Sheet <sup>(2)</sup>	48.60	35.55	54.09	1.13	249.40	149.60
R13-2571L	0.00	0.00	37.54	0.00	0.00	2.69
R13-2571M	15.66	24.66	61.29	~0.00	0.00	27.83
<b>Post-Modification Totals →</b>	<b>64.26</b>	<b>60.21</b>	<b>152.92</b>	<b>1.13</b>	<b>249.40<sup>(3)</sup></b>	<b>180.12</b>

- (1) Conservatively, all particulate matter emissions are assumed to be less than 2.5 microns. Includes condensables.
- (2) From the Title V Fact Sheet R30-03100030-2011 issued on November 1, 2011. This document was created prior to the issuance of R13-2571L and does not include emissions from that modification.
- (3) As the South Branch Plant has a facility-wide VOC limit of 249.4 TPY since the issuance of R13-2571A, there have been no increases to the VOC PTE of the facility.

## REGULATORY APPLICABILITY

The South Branch Plant is subject to a variety of substantive state and federal air quality rules and regulations. Only those rules applicable to the modifications, and those with questionable applicability, will be discussed in detail below.

#### ***45CSR6: To Prevent and Control Particulate Air Pollution from Combustion of Refuse***

AWC has proposed the use of an additional RTO for control of finishing operations. This unit meets the definition of an “incinerator” under 45CSR6 and is, therefore, subject to the requirements therein. The substantive requirements applicable to the unit is discussed below.

##### 45CSR6 Emission Standards for Incinerators - Section 4.1

Section 4.1 limits PM emissions from incinerators to a value determined by the following formula:

$$\text{Emissions (lb/hr)} = F \times \text{Incinerator Capacity (tons/hr)}$$

Where, the factor, F, is as indicated in Table I below:

**Table I:** Factor, F, for Determining Maximum Allowable Particulate Emissions

<u>Incinerator Capacity</u>	<u>Factor F</u>
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

The expected maximum loading of RTO3 is 0.41 tons/hour (825 lbs/hr). Using this value in the above equation produces a PM emission limit of 2.22 lb/hr. The proposed RTO3 is limited to emit a maximum 0.39 lb/hr of particulate matter. This emission rate is 18% of the emission limit.

##### 45CSR6 Opacity Limits for - Section 4.3, 4.4

Pursuant to Section 4.3, and subject to the exemptions under 4.4, RTO3 has a 20% limit on opacity during operation. Proper design/ operation of the unit should prevent any significant opacity.

#### ***45CSR7: To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations***

45CSR7 has three substantive requirements applicable to the proposed woodworking operations - defined as a “manufacturing process” pursuant to §45-7-2.20. These are the opacity requirements under Section 3, the mass emission standards under Section 4, and the fugitive emission standards under Section 5. Each of these sections will be discussed below.

##### 45CSR7 Opacity Standards - Section 3

Section 3.1 sets an opacity limit of 20% on all applicable “source operations” as defined under §45-7-2.38. As noted above, AWC has proposed the use of two new and two existing baghouses to control the particulate matter emissions from the new woodworking operations. Proper use of the baghouses should easily allow for compliance with the opacity limit.

##### 45CSR7 Weight Emission Standards - Section 4

Section 4.1 of 45CSR7 requires that each manufacturing process source operation or duplicate source operation meet a particulate matter limit based on the weight of material processed through the source operation. For the purpose of this evaluation, all facility-wide cabinet component woodworking operations are defined as the “source operation.” This broad grouping is required as there are many individual pieces of equipment venting to eleven (11) different baghouses. As needs change, the equipment vented to a particulate baghouse also changes. Therefore, the compliance determination for this section shall be based on the total process weight rate of all the woodworking operations and the aggregate emission rate from all baghouses. This is considered the most appropriate method of determining compliance with Section 4 of 45CSR7 for this facility and the woodworking operations.

The woodworking operations are defined as a type ‘a’ source type operation under §45-7-2.38. Based on information provided to the writer during the review of R13-2571L, the aggregate maximum amount of material charged through all the existing woodworking operations is 59,508 pounds per hour (lb/hr). This number does not include what would be a large addition of throughput associated with the proposed new woodworking line. However, it may still be used as a very conservative (in this case, low) estimate of the total process weight rate. Therefore, based on Table 45-7A, the aggregate particulate matter limit for all existing and new woodworking lines would be 31.38 lb/hr (for a throughput between any two consecutive process weights stated in the table, the emission limitation is determined by linear interpolation). The maximum aggregate particulate matter emission rate from all baghouses (including the three proposed new baghouses) is 26.77 lbs/hr, or 85.31% of the 45CSR7 limit.

#### 45CSR7 Fugitive Emissions - Section 5

Section 5.1 of Rule 7 states that each manufacturing process must include a system to minimize the emissions of fugitive particulate matter. As the proposed woodworking line is fully controlled by baghouses, no substantive source of fugitive particulate matter is included in this modification.

#### ***45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation***

The South Branch Plant is defined as an existing “stationary source” under §45-13-2.24. Based on the definition as given under Section 2.17, the emissions increase of a regulated pollutant and HAPs associated with this requested changes define this permitting action as a “modification.” Pursuant to §45-13-5.1, “[n]o person shall cause, suffer, allow or permit the modification . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct.” Therefore, AWC is required to obtain a permit under 45CSR13 for the modification evaluated herein.

As required under §45-13-8.3 (“Notice Level A”), AWC placed a Class I legal advertisement in a “newspaper of general circulation in the area where the source is . . . located.” The ad ran on February 18, 2015 in *The Moorefield Examiner* and the affidavit of publication for this legal advertisement was submitted on March 27, 2015.

#### ***45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air***

***Pollution for the Prevention of Significant Deterioration (non-applicability)***

The South Branch Plant is defined (see Table 5 above) as an existing “minor stationary source” under 45CSR14 - i.e., PTE of each regulated pollutant is less than 250 TPY. The post-modification facility-wide PTE of each pollutant shall remain below 250 TPY and, therefore, the proposed changes are not defined as a major modification under 45CSR14 and the provisions do not apply.

***45CSR30: Requirements for Operating Permits (non-applicability)***

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The South Branch Plant, defined under Title V as a “major source,” was issued a Title V permit on November 1, 2011. Proposed changes evaluated herein must also be incorporated into the facility's Title V operating permit. Commencement of the operations authorized by this permit shall be determined by the appropriate timing limitations associated with Title V permit revisions per 45CSR30.

***45CSR31: Confidential Information***

45CSR31 “establishes the requirements for claiming information. . . as confidential and the procedures for determinations of confidentiality.” AWC claimed information in permit application R13-2571M as Confidential Business Information (CBI). After a significant retraction of original CBI claims, the final iteration of the application contained one claim of CBI on the following information:

**Table 6: Information Claimed CBI**

<b>Application Page</b>	<b>Description</b>
Attachment E	Facility Plot Plan

Pursuant to §45-31-3.4, AWC submitted a properly labeled redacted copy of the permit application. This version of the permit application is the version made available to the public for review (CBI is indicated as a blacked out area). Additionally, pursuant to §45-31-3.3.c, AWC submitted a CBI cover sheet that provides information concerning the submission of CBI.

As per internal guidance, the role of the permit engineer in reviewing claims of CBI is to determine if the applicant has made a creditable request that certain information be protected as CBI and that the specific information is reasonably appropriate (most importantly, not defined as “emissions data”) for such designation.

**45CSR31 Determination of Confidentiality - Section 4**

Section 4 of 45CSR31 lists a series of requirements that information claimed as CBI must meet to be eligible for protection and substantively includes the following:

- The person asserting the claim of confidentiality has satisfactorily shown that it has taken reasonable measures to protect the confidentiality of the information, and that it intends to continue to take such measures;
- The information claimed confidential is not, and has not been, reasonably obtainable without

the person's consent by other persons (other than governmental bodies) by use of legitimate means;

- No statute specifically requires disclosure of the information; and
- The person [asserting the claim of confidentiality] has satisfactorily shown that disclosure of the information is likely to cause substantial harm to the business's competitive position

AWC has provided a reasonable justification to these points.

#### 45CSR31 Determination of Confidentiality - Section 6

Section 6 of 45CSR31 states that “[n]o person shall claim as confidential, information concerning the types and amounts of air pollutants discharged.” “Types and amounts of air pollutants discharged” is defined under Section 2.4. It states that generally “emissions data” (§45-31-2.4.a.1 and 2.4.a.2) and a “general description of the facility” (§45-31-2.4.a.3) may not be claimed CBI. What constitutes “emissions data” is clarified under 45CSR31B.

As noted above, AWC only claimed their facility-wide plot plan as confidential. After review, it was determined that their claim of the plot plan as confidential did not violate the restriction on CBI claims of a “general description of the facility.” Under Attachment G of the permit application, AWC did supply a general process description of the facility and it, combined with other information in the application, supplied the basis for the DESCRIPTION OF PROCESS in this evaluation. Specifically, the process information provided was determined to be “to the extent necessary to identify the source and to distinguish it from other sources (including, to the extent necessary for such purposes, a description of the device, installation, or operation constituting the source).” [§45-31-2.4.a.3]

Section 4 of 45CSR31B provides the clarification of what constitutes emissions data. Specifically, the section states that “[i]nformation or data that is indispensable or essential to determining emissions or location . . . will be considered emission data and thus non-confidential.” After review, it has been determined that the information claimed CBI, as noted above, does not constitute “emissions data” in that it is not “indispensable or essential to determining emissions or location.” AWC has provided under Attachment N a reasonable estimate of emissions (as described and reviewed above under EMISSIONS CALCULATION METHODOLOGIES) that does not require, to verify to an acceptable level, any information claimed CBI, specifically the plot plan claimed CBI under Attachment E.

#### ***40 CFR 63, Subpart JJ: National Emission Standards for Wood Furniture Manufacturing Operations (Partial Applicability)***

Based on the PTE given in the (R30-03100030-2011) Title V Fact Sheet, the South Branch Plant is an existing major stationary source of HAPs under 40 CFR 63, Subpart A, §63.2. Therefore, pursuant to §63.800, any “affected source” under Subpart JJ is subject to the applicable requirements therein. There are no requirements for woodworking operations, as these operations have no potential to emit HAPs. However, the waste-recovery still, the new finishing line, and the manual spray booth are potentially applicable to Subpart JJ as “affected sources.”

## Waste-Recovery Still (non-applicability)

Concerning the waste-recovery solvent still, §63.803(f) states:

**Spray booth cleaning.** Each owner or operator of an affected source shall not use compounds containing more than 8.0 percent by weight of VOC for cleaning spray booth components other than conveyors, continuous coaters and their enclosures, or metal filters, or plastic filters unless the spray booth is being refurbished. If the spray booth is being refurbished, that is the spray booth coating or other protective material used to cover the booth is being replaced, the affected source shall use no more than 1.0 gallon of organic HAP solvent per booth to prepare the surface of the booth prior to applying the booth coating.

AWC has stated (during the review of R13-2571M) that the use of the Xylene solvent (100% VOC solvent by-weight) to clean spray booth components (and subsequently cleaned in the recovery still) shall only be used to clean “conveyors, continuous coaters and their enclosures, or metal filters, or plastic filters” and, therefore, the solvents used in the cleaning operations and subsequently recovered in the still are not subject to this section.

## New Finishing Line and Manual Spray Booth

As AWC has proposed a new finishing line engaged in the “manufacture of wood furniture or wood furniture components and that is located at a plant site that is a major source” of HAPs, it is subject to the applicable emission limits (§63.802), work practice standards (§63.803), and MRR (§63.804) as given under Subpart JJ. Substantively, the new finishing line must meet the emissions limits given under Table 3 to Subpart JJ. AWC will primarily comply with the emission limits given under Subpart JJ, Table 3 through the use of the RTO to control the emissions of HAPs.

## **TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS**

This section provides an analysis for those regulated pollutants that may be emitted from the proposed modification and that are not classified as “criteria pollutants.” Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO<sub>x</sub>), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM<sub>10</sub>), Particulate Matter less than 2.5 microns (PM<sub>2.5</sub>), and Sulfur Dioxide (SO<sub>2</sub>). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific HAP limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed under REGULATORY APPLICABILITY above.

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. AWC has identified the following HAPs as potentially being increased as part of the modifications evaluated herein: Xylene, Formaldehyde, Methanol, and Toluene. The following table lists each HAP’s carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)) and the potential increase for that HAP from the modifications

proposed herein:

**Table 7: Potential HAPs - Carcinogenic Risk**

HAPs	Type	Proposed Increase (tons/yr)	Known/Suspected Carcinogen	Classification
Xylene	VOC	0.14	No	Inadequate Data
Formaldehyde	VOC	0.02	Yes	B1 - Probable Human Carcinogen
Methanol	VOC	1.57	No	No Assessment Available
Toluene	VOC	33.75	No	Inadequate Data

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health affects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the known health effects of each compound refer to the IRIS database located at [www.epa.gov/iris](http://www.epa.gov/iris).

### **AIR QUALITY IMPACT ANALYSIS**

The proposed modification does not meet the definition of a “major modification” pursuant to 45CSR14 and, therefore, an air quality impact (computer modeling) analysis was not required. Additionally, based on the nature of the proposed modification, modeling was not required under 45CSR13, Section 7.

### **MONITORING, COMPLIANCE DEMONSTRATIONS, RECORD-KEEPING, AND REPORTING REQUIREMENTS**

The monitoring, compliance demonstration, and record-keeping requirements (MRR) for the new woodworking operations (including the baghouses) and the new finishing line shall be folded into the existing applicable permit requirements. This includes pressure drop and visible emissions monitoring of the baghouses and actual emissions recording of the new finishing line. The MRR for the manual spray booth and waste recovery still will remain the same.

### **PERFORMANCE TESTING OF OPERATIONS**

Due to the nature of the modification, the known reliability of properly operated baghouses, and the pressure drop and visible emissions monitoring of the baghouses, no new post-issuance performance testing was required as a result of this modification on these units.

Performance testing was required on RTO3 to determine compliance with the overall

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capture/destruction efficiency of the unit and to determine the compliance with the CO and NO<sub>x</sub> emission limits under 4.1.16.

### **CHANGES TO PERMIT R13-2571L**

Substantive changes to Permit Number R13-2571L are limited to the following:

- Equipment associated with the new woodworking operations, finishing line, and control devices were added to Emissions Table 1.0;
- Equipment in the Emissions Table 1.0 were rearranged and regrouped for clarity and "date installed" column was added ;
- Baghouses BH9 - BH11 and the associated emission limits were added to 4.1.11;
- Finishing operation VOC limits were removed from the RTO emission limits under 4.1.16. and added under 4.1.17. Requirement 4.1.16. was revised to include only emission limits from only the products of combustion;
- Requirement 4.1.22 was revised per request from AWC to remove the separate emission limit associated with the manual spray booth and the emissions specified to be included in the facility-wide compliance demonstration as with other finishing operations;
- Requirement 4.1.60. was revised to reflect the higher throughput of the waste-recovery still; and
- Requirement 4.1.60. was added to address the potential particulate matter emissions from overspray in Finishing Line 3.

### **RECOMMENDATION TO DIRECTOR**

The information provided in the permit application indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of a Permit Number R13-2571M to American Woodmark Corporation for the above discussed modification of the South Branch Plant located in Moorefield, Hardy County, WV.

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Joe Kessler, PE  
Engineer

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Date

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