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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3300
Plant ID No.:	031-00049
Applicant:	Allegheny Dimension, LLC (AD)
Facility Name:	Moorefield Facility
Location:	Moorefield, Hardy County
NAICS Code:	321113 (Sawmills)
Application Type:	Modification
Received Date:	March 02, 2016
Engineer Assigned:	Thornton. E. Martin Jr.
Fee Amount:	$2,000
Date Received:	March 03, 2016
Complete Date:	March 30, 2016
Applicant Ad Date:	March 09, 2016
Newspaper:	*The Moorefield Examiner*
UTM's:	Easting: 674.25 km Northing: 4,323.12 km Zone: 17
Description:	Applicant proposes to relocate equipment for woodworking from their Petersburg, WV facility (R13-1958; 023-00025) to a former cabinet manufacturing facility near Moorefield, WV(R13-2220D; 031-00003).

DESCRIPTION OF PROCESS

Allegheny Dimension, LLC (AD) operates a facility near Petersburg, WV, that manufactures hardwood dimension stock components for furniture manufacturers. The facility utilizes saws, planers, moulders, lathes, mills and sanders to manufacture these wood components. Some components are glued and some receive a partial coating of a water-based glue (panel cure) to prevent end splitting. Gluing and panel cure have no emissions to the air.

AD wishes to relocate most of the existing woodworking equipment to a former cabinet manufacturing facility near Moorefield, WV. The cabinet manufacturing company had two (2) boilers that utilized sawdust for fuel and two (2) silos for storage of sawdust. AD will use one (1) of the two (2) boilers and both silos for the new operation.

Sawdust and wood chips from the woodworking operations will vent to one (1) of two (2)

new baghouse systems. The air stream from the exhaust ventilation systems servicing the woodworking equipment is filtered by these baghouses and either returned to the building as make-up air or vented to the outside through emission point E001 and E002. The scrap wood and chips are routed to grinders (hogs). The ground wood from the grinders is pneumatically conveyed via the Line A exhaust ventilation system to the Unit A baghouse (S1A). The wood particles collected by the two (2) baghouses are discharged via rotary valves to a duct for pneumatic conveyance to a cyclone (DC1) located above silo (S-1). This pneumatic conveying system is "closed loop" in that the wood particles conveyed from the baghouses enter into the new cyclone (DC1) where the particles drop out and the cleaned air stream is recycled back into the pneumatic conveying system from the cyclone. A rotary feeder in the bottom cone of the cyclone is used to discharge the wood particles to silo 1.

The woodworking (machining) equipment is organized as three (3) systems with each "system" serviced by separate exhaust ventilation ductwork as described below:

System Designation	Type of Equipment	Baghouse Unit Receiving Dust from System	
A	Saws, grinder, planar	A	(S1A)
B	Moulders	B	(S1B)
C	Sanders, saws, mills, lathe	B	(S1B)

The sawdust generated by each of these systems is collected via a dust collection ductwork system which is vented to the respective baghouse.

Screw conveyors transfer the wood particles from Silo S-1 to Silo S-2 for storage as needed and transfer for use as fuel in the boiler (B1).

The saw dust and grindings from wood chips and wood scrap are used to fuel the facility wood fueled boiler. Steam from the boiler is used to provide comfort heating inside the building. In the event that excess saw dust is produced. there are truck loadouts for off-site shipment from each of the two (2) storage silos.

The maximum annual throughput of wood for the facility will be 15 million board feet which s equivalent to 56,250,000 pounds per year. The hours of woodworking operation for a maximum production year is 4000 hours per year which results in a process weight rate of 14,062.5 pounds per hour.

The maximum annual saw dust/wood particle generation for the new facility is 14,062.5 tons, which equates to an average of 7,031.25 pounds per hour of operation.

The filtered exhaust from the two (2) baghouses which have a 99.98% control efficiency results in 2.8 pounds per hour of total particulate emissions from the S1A and S1B combination. The DC1 filtered cyclone will have no emissions since the filtered air stream from it is recycled for use in the pneumatic conveying system.

The majority of the dust particle production is from grinding the wood waste and the rip saws. This accounts for approximately 90% of the dust particles generated, which will have a diameter of > 10 microns. The dust quantity with a particle size of 10 microns or less generated

by the machining which is transferred to the baghouses is estimated to be less than 268 pounds per hour entering the baghouses and less than 0.05 pounds per hour total discharged from the combination of the two (2) baghouses. The quantity of dust produced with a diameter of 2.5 microns or less is estimated to be less than 0.01 pound per hour from both baghouses since such machining of wood does not typically generate $PM_{2.5}$.

With respect to the silo loadout of wood particles for off-site shipment, covered trucks can be positioned beneath the silos with the wood particles dropped to the bed of the trucks. Based on the large particles size of the majority of the particles stored in the silos and the configuration of the particle enclosure of the truck loadout, no local exhaust ventilation is deemed necessary for control of the dust, based on ADs' experience with wood particles at its' current site.

The Applicants' modification to the Moorefield plant will be configured with the following list of equipment and control devices:

Emission Unit ID	Emission Point ID	AMR[1]	Emission Unit Description	Year Installed	Design Capacity	Control Equipment[2]
B1	E003	M	Wood Fired Boiler - Hurst Boiler and Welding Co., Model H-1950-150-WF	1998	14.4 mmBtu/hr	DB3
S1	E004	M	Silo 1	1998		DC1
S2A	E001	A	Rip Progressive Saws	2016	NA	S1A
S3A and S17A	E001	A	Talon Chop	2016	NA	S1A
S4A	E001	A	Vecoplan Grinder (Hog)	2016	NA	S1A
S5A	E001	A	Maddison Rip Saw 3	2016	NA	S1A
S6A	E001	A	Crestwood Grinder (Hog)	2016	NA	S1A
S7A	E001	A	Variety Saw	2016	NA	S1A
S8A	E001	A	Maddison Rip Saw 1	2016	NA	S1A
S9A	E001	A	Maddison Rip Saw 2	2016	NA	S1A
S10A	E001	A	Whirlwind Chop Saws 2	2016	NA	S1A
S11A	None	A	Glue Clamp 1	2016	NA	None
S12A	E001	A	Planer 1	2016	NA	S1A
S13A	E001	A	Planer 2	2016	NA	S1A
S14A	E001	A	Planer 3	2016	NA	S1A
S15A	E001	A	Planer 4	2016	NA	S1A
S16A	E001	A	Panel Saw	2016	NA	S1A
S2	E002	M	Silo 2	1998	NA	None

Emission Unit ID	Emission Point ID	AMR[1]	Emission Unit Description	Year Installed	Design Capacity	Control Equipment[2]
S3	E001	A	Pneumatic Sawdust Conveyor	2016	NA	None
S2B	E002	A	Moulder 4	2016	NA	S1B
S3B	E002	A	Weinig Moulder 2	2016	NA	S1B
S4B	E002	A	Weinig Moulder 1	2016	NA	S1B
S5B	E002	A	Weinig Moulder 3	2016	NA	S1B
S6B	E002	A	Celassi DET	2016	NA	S1B
S7B	None	A	Panel Cure	2016	NA	None
S1C	E002	A	Edger Sander	2016	NA	S1B
S2C	E002	A	PICO	2016	NA	S1B
S3C	E002	A	R-Bore	2016	NA	S1B
S4C	E002	A	Unique 1	2016	NA	S1B
S5C	E002	A	Unique 2	2016	NA	S1B
S6C	E002	A	Fletcher Frame / Rail Machine	2016	NA	S1B
S7C	E002	A	Root Boring Machine	2016	NA	S1B
S8C	E002	A	Horizontal Bore	2016	NA	S1B
S9C	E002	A	Fletcher Sander	2016	NA	S1B
S10C	E002	A	CNC lathe	2016	NA	S1B
S11C	E002	A	Razor Industrial Chopsaw	2016	NA	S1B
S12C	E002	A	Gaboni DET	2016	NA	S1B
S13C	E002	A	DET 2	2016	NA	S1B
S14C	E002	A	Edger Sander	2016	NA	S1B
S15C	E002	A	Pico Boring Machine	2016	NA	S1B

1 A - Addition; M - Modification; R - Removal (Existing unmodified equipment to be included in the permit is labeled with an M.)

2 DB3 - Hurst 12K-1.7 Multicyclone; DC1 - Model 22C15 Filtered Cyclone; S1A - MAC Model 144MPH416 Baghouse; S1B -Camcorp Model 12HVP504 Baghouse; None - No Controls

SITE INSPECTION

Karl Dettinger of DAQs' Compliance and Enforcement Section from our North Central Regional Office inspected the Moorefield facility while it was owned by American Woodmark Corporation on April 23, 2013 and confirmed that the facility was shutdown and that all equipment was removed with the exception of a UV Oven, silos and two (2) boilers.

Joseph Kreger of DAQs' Compliance and Enforcement Section from our Eastern Panhandle Regional Office performed the most recent inspection of the Petersburg facility on January 16, 2014 and was found to be In Compliance with all paperwork in order and no fugitive emissions present. This facility will be placed on the appropriate list for inspection upon permit issuance and therefore, the writer deemed that a site visit was not needed at this time.

Directions: The facility is located at the Moorefield Industrial Park approximately one mile South of Moorefield on the West side of US Route 220/State Route 28.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The Moorefield facility will receive and ship all raw materials and products by truck. The only materials located outside the main building is the saw dust in the silos and the ash from the boiler. No fugitive emissions will be created during the operation of this facility. Emission point E001 services system A which generates 90% of woodworking emissions. Emission point E002 services system B & C which generates 10% of woodworking emissions. Emission point E003 is a 300 horsepower Hurst Boiler and Welding Co., Model H-1950-150-WF with a maximum design heat input of 14.4 MMBTU/hour. The boiler will consume 2060 lb/hour of wood waste and will produce steam at a rate of 10,350 lb/hour and 150 psig. The average density of wood used at the facility is 45 lb/ft^3 (CRC Handbook of Applied Engineering Science, Table 1-86, Density of Various Solids). Both baghouses will have a minimum of 99.98% collection efficiency. The estimated emission calculations were performed by the applicants' consultant and were checked for accuracy and completeness by the writer.

Allegheny Dimension, LLCs' proposed modification will result in the following estimated potential to discharge controlled emissions:

Source ID	Emission Source	Pollutant	Proposed Emissions	
			(lb/hr)	(tpy)
E003	Multiclone (Boiler, 14.4 MMBTU/hr)	Nitrogen Oxides	3.17	7.98
		Carbon Monoxide	8.64	21.77
		Sulfur Dioxide	0.36	0.91
		PM	2.88	7.26
		PM_{10}	2.59	6.53
		$PM_{2.5}$	2.22	5.59
		Volatile Organic Compounds	0.55	1.38
E001	Bag-House (S2A - S16A)	PM	1.27	2.53
		PM_{10}	0.014	0.025
E002	Bag-House (S1B - S7B & S1C - S15C)	PM	0.14	0.28
		PM_{10}	0.014	.028
E004	Filtered Cyclone (Silo 1)	PM	0.00	0.00

REGULATORY APPLICABILITY

The proposed facility is subject to the following state and federal regulations.

45CSR2 - *To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers*

The purpose of this rule is to establish limitations for smoke and particulate matter which are discharged from fuel burning units. Per this rule, Section 2.14 defines an indirect heat exchanger as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. Section 2.10 defines a fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. The facility is not exempt from sections 4 (PM weight standard), 5 (Control of fugitive PM), 6 (Registration), 8 (Testing, Monitoring, Record-keeping, and Reporting), and 9 (Start-up, Shutdowns, and Malfunctions) because the boiler is over 10 MMBtu/hr. The facility will be subject to the opacity requirements in this rule, which is 10% opacity based on a six minute block average.

45CSR7 - *To Prevent and Control Particulate Matter Air Pollution from Manufacturing Processes and Associated Operations*

The wood working equipment and associated baghouse should meet the hourly emission limits set forth in 45CSR7. For a maximum process weight of 14,062.5 lb/hour of wood, the allowable emission rate for a type 'a' source is 12.44 lb/hour. The proposed emission rate after control devices is 1.41 lb/hour.

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 proposed modification will be subject to the requirements of 45CSR13 because it will result in the potential to discharge regulated air pollutants greater than 6 pounds per hour and 10 tons per year of a regulated air pollutant (CO). The applicant has submitted the $2,000 application fee and published a Class I legal advertisement in *The Moorefield Examiner* on March 09, 2016.

45CSR22 - *Air Quality Management Fee Program*

In accordance with 45CSR22 - "Air Quality Management Fee Program", the permittee shall not operate nor cause to operate the permitted facility or other associated facilities on the same or contiguous sites comprising the plant without first obtaining and having in current effect a Certificate to Operate (CTO). Such Certificate to Operate (CTO) shall be renewed annually, shall be maintained on the premises for which the Certificate

has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

40CFR60, Subpart Dc - *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*

The affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h).

This facility will only use wood waste as fuel and therefore, the owner or operator of each affected facility shall record and maintain records of the amount of each fuel combusted during each operating day.

40CFR63, Subpart JJJJJJ - *National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial and Institutional Boilers and Process Heaters*

The affected facility to which this subpart applies is each existing or new coal, new biomass, and new oil (units with heat input capacity of 10 million Btu per hour or greater).

Requirements under this subpart for an existing biomass boiler are:

1. Minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures. If manufacturer's recommended procedures are not available, you must follow recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available.

2. Conduct a tune-up of the boiler biennially as specified in § 63.11223.

3. Must have a one-time energy assessment performed by a qualified energy assessor. An energy assessment completed on or after January 1, 2008, that meets or is amended to meet the energy assessment requirements in this table satisfies the energy assessment requirement. The energy assessment must include:
   (a) A visual inspection of the boiler system,
   (b) An evaluation of operating characteristics of the facility, specifications of energy using systems, operating and maintenance procedures, and unusual operating constraints,
   (c) Inventory of major systems consuming energy from affected boiler(s),
   (d) A review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage,

(e) A list of major energy conservation measures,
(f) A list of the energy savings potential of the energy conservation measures identified,
(g) A comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.

AIR QUALITY IMPACT ANALYSIS

Air dispersion modeling will be performed when the Director finds existing circumstances and/or submitted data provide cause for an assessment to be made concerning whether a specific emissions source may interfere with attainment or maintenance of an applicable ambient air quality standard or cause or contribute to a violation of an applicable air quality increment from any proposed permit registration action. Factors to be considered when determining whether an ambient air assessment would be made include:

a. Existing air quality of the area
b. Topographic or meteorological factors
c. Maximum emissions
d. Siting criteria

Air dispersion modeling was not performed due to the size and location of this facility. This facility will be located in Hardy County, WV, which is currently in attainment for PM (particulate matter), PM_{10} (particulate matter less than 10 microns in diameter) and $PM_{2.5}$ (particulate matter less than 2.5 microns in diameter).

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates Allegheny Dimension, LLC's manufacturing of hardwood dimension stock components for furniture manufacturers meets all the requirements of applicable rules regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Hardy County location should be granted a 45CSR13 Modification permit for the Moorefield facility.

Thornton E. Martin Jr.
Permit Engineer

March 30, 2016
Date