DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B860667267

FACILITY: DAVIDSON PLYFORMS INC		**SRN / ID:** B8606
LOCATION: 5505 33RD ST SE, GRAND RAPIDS		**DISTRICT:** Grand Rapids
CITY: GRAND RAPIDS		**COUNTY:** KENT
CONTACT: Dean Huizenga , Manufacturing Engineer		**ACTIVITY DATE:** 03/14/2023
STAFF: April Lazzaro	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Unannounced, scheduled inspection.		
RESOLVED COMPLAINTS:		

Staff April Lazzaro conducted an unannounced scheduled inspection of Davidson Plyforms located at 5505 33rd Street in Grand Rapids. The purpose of the inspection was to determine the facility's compliance with state and federal air pollution regulations as well as Permit to Install (PTI) No. 28-09B. Accompanying AQD staff on the inspection was Dean Huizenga, Manufacturing Engineer.

FACILITY DESCRIPTION

Davidson Plyforms manufacturers wood furniture parts such as seat backs and bottoms. The company has various adhesive machines, presses, woodworking equipment, and finishing booths. The facility's potential to emit of hazardous air pollutants (HAPs) and volatile organic compounds (VOCs) is limited to below the major source thresholds. Because the company is a synthetic minor source of HAPS, the facility is not subject to 40 CFR Part 63, Subpart JJ for Wood Furniture Manufacturing. All equipment is permitted under PTI No. 28-09B.

COMPLIANCE EVALUATION

Woodworking Machines (FGPRESSES):

The company has various woodworking machines covered under PTI 28-09B used to shape, route, bore and assemble plywood office furniture parts. Each machine is equipped with an air vacuum hose or collector in which particulate is routed to two cyclones then through a baghouse. There are three baghouses at the facility (referred to as Nos. 1, 2, and 5) that each have approximately 40,000 cfm airflow capacity. The airflow can be vented back into the plant for heat recovery and were doing so at the time of the inspection. There was very minor residual wood dust on the ground in one area because a hole was tapped into the line due to recurrent freezing/plugging in that area. The baghouses appeared to be operating properly and no other issues were identified. According to Mr. Huizenga, bags in one of the baghouses are replaced each year. All stacks appeared to meet permit requirements.

Magnahelic gauges are used to monitor the pressure drop across each baghouse. In addition, daily pressure drop records are kept in accordance with the permit. At the time of the inspection, Unit 1 had a pressure drop of 2.0 inches of water, Unit 2 had a pressure of 2.7 inches of water, and Unit 5 had a pressure of 0.8 inches of water. While Unit 5 is somewhat low, since it is recirculating back into the plant, it would be obvious if a bag tear had occurred and is considered acceptable.

Glue spreaders and molding presses (FGPRESSES):

PTI No. 28-09B covers seventeen glue spreaders and 26 plywood molding presses used to adhere various layers of veneer that are then pressed into shaped plywood to form the furniture piece. According to Mr. Huizenga, there are currently

10 spreaders and 19 molding presses currently being used for production. The glue spreaders are essentially roll coaters, with high transfer efficiency, which apply a thin film of adhesive to each layer of veneer. Both the roll coaters and molding presses are vented to the general in-plant environment. Based on discussions with Mr. Huizenga, this process and the adhesive used by the facility has not changed since the last AQD inspection.

According to Mr. Huizenga, Davidson Plyforms still uses the same Akzo Nobel 1203 glue, with no reformulation. The adhesive has a VOC content of 0.04 pounds of VOC per gallon of coating which is in compliance with the 0.04 lb/gal limit. The company uses an alternate emission factor to calculate mass emissions of formaldehyde from the adhesive. The site specific factor (0.036% by wt.) was derived from an AQD approved test that the company conducted in 2008. The test was undertaken to determine the amount of formaldehyde actually released versus the amount retained in the product. The adhesive formaldehyde content is calculated to be 0.004 lb/gal which is below the applicable formaldehyde content limit of 0.02 lb/gal.

The company is maintaining emissions and material usage records. According to company records, emissions from February 2022-January 2023 were as follows:

Unit	Parameter	Actual	Limit	Compliance
FGPRESSES	VOC	1.39 tpy	2.1 tpy 12-month rolling	Y
	VOC content of adhesive	< 0.04 lb/gal	0.04 lb/gal (minus water)	Y
	formaldehyde content of adhesive	0.004 lb/gal	0.02 lb/gal (minus water)	Y
	PM	NA	0.01 lbs/1,000 lbs of exhaust	Proper operation
	PM2.5	NA	5.9 pph	Proper operation
	PM10	NA	5.9 pph	Proper peration

Wood Spray Finishing (FGCOATING):
FGCOATING under PTI No. 28-09B covers two coating lines. Line 1 (EUCOATING01) consists of three manual spray booths, one used to apply stain, one used to apply a two part conversion varnish, and an offline booth used to apply stain on larger parts. This line has an infrared curing oven. Each booth consists of two sets of

filters. This includes panel filters and a sheet filter which is changed at least every week on the stain booth and changed every shift on the varnish booth. All spent filters are disposed of in accordance with the permit.

Line 2 (EUCOATINGLINE02) consists of four manual spray booths used to apply stain and a two-part conversion varnish. This line also has an infrared curing oven.

The company still uses Devilbiss - Compact model high volume low pressure (HVLP) spray applicators across all finishing booths in accordance with the permit. All stacks meet permit requirements.

The company is maintaining emissions and material usage records. According to company records, emissions from February 2022-January 2023 were as follows:

Unit	Parameter	Actual	Limit	Compliance
FGCOATING	VOC	16.09 tpy	44.8 tpy 12-month rolling	Y
	Acetone	5.30 tpy	14.9 tpy 12-month rolling	Y
	VOC content solvent based stain	6.93 lb/gal	6.9 lb/gal (minus water)	Y (rules of rounding apply)
	VOC content water-based stain	5.5 lb/gal	5.7 lb/gal (minus water)	Y
	VOC content acrylic/lacquer topcoat	5.635	5.6 lb/gal (minus water)	Y (rules of rounding apply)
	VOC content varnish topcoat	5.1 lb/gal	5.1 lb/gal (minus water)	Y
	VOC content water-based topcoat	1.31 lb/gal	2.1 lb/gal (minus water)	Y
	VOC content vinyl sealer topcoat	<5.51 lb/gal	5.6 lb/gal (minus water)	Y none in use currently

FGFACILITY	Individual HAP (xylene)	<2.14 tpy	9.0 tpy 12-month rolling	Y
	Aggregate HAP	0.90 tpy xylenes	22.5 tpy 12-month rolling	Y
	Formaldehyde	0.005 tpy	0.6 tpy 12-month rolling	Y
	Low-use Coating	10 gallons	55 gallons/yr (12-month rolling)	Y

The company uses manufacturer's formulation data in their emissions calculations which has been approved by AQD. It is noted that the company needs to make improvements on formulation data review, and they have agreed to implement an annual review schedule to ensure data accuracy. This is acceptable, and none of the discrepancies constitute a significant increase or decrease in emissions, and do not affect the facility compliance status.

Miscellaneous:

The company has a plastic chair molding process. Essentially the company purchases ground up recycled plastic, heats it so that the plastic melts together and becomes pliable and fluid. Then the company puts the heated plastic in a mold press to form the seat. The company has a three-stage particulate filter including a charcoal filter to minimize steam and smoke from the process. This system is exhausted out of the plant. This process is exempt under Rule 286(2)(b).

EVALUATION SUMMARY

Davidson Plyforms was in compliance at the time of the inspection.

NAME April Lazzaro DATE 05/01/2023 SUPERVISOR HH