

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

B195667813

FACILITY: AJAX MATERIALS CORPORATION		SRN / ID: B1956
LOCATION: 4875 BALD MOUNTAIN RD, AUBURN HILLS		DISTRICT: Warren
CITY: AUBURN HILLS		COUNTY: OAKLAND
CONTACT: Ryan Belanger , Business Systems Coordinator		ACTIVITY DATE: 05/25/2023
STAFF: Robert Joseph	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Scheduled inspection of HMA plant.		
RESOLVED COMPLAINTS:		

On May 25, 2023, I, Michigan Department Environment, Great Lakes, and Energy-Air Quality Division (EGLE – AQD) staff Robert Joseph, conducted a scheduled inspection of Ajax Materials Corporation (B1956) also referred to as “the facility,” located at 4875 Bald Mountain Road, Orion Township, Michigan 48326. The purpose of the inspection was to determine the facility’s compliance with the requirements of the Federal Clean Air Act Part 55 – Air Pollution Control, Natural Resources and Environmental Protection Act – 1994 PA 451; Michigan Department Environment, Great Lakes, and Energy – Air Quality Division Administrative Rules, and conditions of the facility’s Permit to Install (PTI) 75-17.

Background Information

The facility is located in an urbanized area in northern Oakland County on the east side of M-24 (Lapeer Road) across from the former site of the Palace of Auburn Hills. The facility mailing address is Auburn Hills, however, the plant location is in Orion Township and just to the west is a populated subdivision in the city of Lake Orion. The facility was one of the first locations owned by the Ajax Corporation and dates back to the 1960s. The facility primarily produces Hot Mix Asphalt (HMA) for local, county and state road projects and operates six days a week during the construction season and sometimes seven days (depending on project scheduling). There are three employees at the facility who run the HMA operations. The facility is equipped with a vapor condensation recovery system on the liquid asphalt cement storage tanks, and an emission capture system on the top of each storage silo.

In 2017, the facility modified the production drum from parallel flow to counterflow. This modification was performed in an attempt to mitigate and eliminate nuisance odors that had plagued the surrounding community due to the asphalt process. Following these changes, the number of complaints decreased briefly after PTI 75-17 was issued in November 2017, however, ten complaints were alleged against the facility in October 2019.

An AQD investigation into these complaints verified the existence of these odors and determined them to be definite and objectionable – interfering with the comfortable of enjoyment of one’s life, therefore, a violation notice was issued to the facility in December 2019. The facility proposed to use an Asphalt Solutions Additive at the onset of the paving season in April 2020. The AQD read a case study in which an additive was used at an asphalt production plant near a residential community to mitigate nuisance odors and was determined to be a success.

Per the Safety Data Sheet, the ingredients of the additive consists of Benzaldehyde (flavoring agent used in perfumes and flavorings), Amyl Acetate (a flavoring agent known for its banana-like scent), Ethyl Butyrate (a flavoring agent known to have a fruity odor and is used as a flavor enhancer), and Vanillin (a flavoring agent used in foods such as ice cream). None of the compounds are listed as carcinogenic nor as an irritant to the skin or

eyes. It contains 0.28 lb of VOC (volatile organic compounds) per gallon. The facility used approximately 10 gallons of the additive in April 2023.

Since the facility implemented the use of the additive in April 2020, there have been six odors alleged against the facility in which the origin of the odors could not be determined, and all occurring in a three-week period between September 27 – October 17, 2021. There have been no other odor complaints alleged against the facility as three others were due to a local paving operation and a Consumers Energy gas line. The belief is that perhaps the additive has eliminated or at least reduced the nuisance odors from plaguing the surrounding community (given that those six odor complaints were never verified in the last three years – all occurring within a three-week period in 2021).

Facility Tour

I arrived at the facility shortly before 11 a.m. and met with Kevin Kline, operator, of the facility. I introduced myself and presented my identification and credentials and stated the purpose of my visit. The HMA is produced in a counter-flow rotary drum that is fueled by natural gas. There are three RAP bins (recycled asphalt pavement) and thirteen virgin aggregate bins. The HMA product can be altered by changing the virgin aggregate and RAP mixture at the beginning of the process.

The process begins by loading the desired aggregate mix into the feed hoppers, and once the appropriate aggregate is chosen for a specific mix design – the aggregate falls from its bin onto the main conveyor belt. There is a single main belt for each virgin and RAP material. The aggregate is conveyed to a weigh bridge before it is sent to the counter flow direct-fired rotary drum. The exhaust gases of the drum pass through the dryer flame which combusts the fumes. These gases then exit the drum at the opposite end from the entrance of the paving materials. The drum is designed for the aggregate to flow counter to the heat source, thus allowing for high aggregate temperatures and low stack temperatures (since the burner flame is not in contact with the asphalt).

The facility's mix process uses emulsified liquid from asphalt cement storage tanks which is housed in five tanks (30,000 gallons) consisting of one horizontal and four vertical tanks. The facility also contains a Tack tank, which is an adhesive-like compound that is applied onto the unpaved surface before the placement of hot-mix asphalt (HMA) to aid in adhesion.

In addition, there are six asphalt storage tanks that hold the HMA that are produced. Each tank holds 300 tons. The HMA mix is maintained around 300-355 degrees F for ease of placement and compaction in-place. Exhaust gas from the dryer/mixer is directed to a primary collector consisting of a series of pulse-jet bags (fabric filters). There are approximately 924 fabric filter bags where dust and particulates from the aggregate are mixed back into the final product. A stack with an exhaust diameter of approximately 68 inches emits the emissions into the atmosphere.

PTI 75-17

GENERAL CONDITIONS

There were no concerns regarding these conditions at the facility. No visible emissions were observed from the stack, no malfunctioning equipment, and no modifications of the facility's equipment was observed.

EU-HMAPLANT

I. EMISSION LIMITS

The following pollutants were tested on July 18, 2018, per Section V.1

Pollutant	Test Result	Permit Limit
1. PM	0.005 gr/dscf	0.04 gr/dscf
2. PM	0.004 lb/ton	0.05 lb/ton

The PM emissions meet the permit requirement. The AQD has not mandated that the remaining pollutants be tested per Section V.3 which states in part, "verification and quantification of emissions from EU-HMAPLANT may be required for continued operation (PM10, PM2.5, CO, SO₂, NO_x, lead, and the TACs: acrolein, arsenic, benzene, ethylbenzene, formaldehyde, lead, manganese, naphthalene, nickel, sulfuric acid mist, toluene, xylene, and hydrogen chloride)."

II. MATERIAL LIMITS

The facility only burns natural gas and has not burned blended oil or recycled used oil. In addition, they do not appear to burn hazardous waste, asbestos tailings, or waste materials containing asbestos. The facility's RAP averages between 26% and 45% (the maximum RAP allowed is 50% combined of recycled asphalt and shingles).

The permit limit is 895,000 tons of HMA paving materials in EU-HMAPLANT per a 12-month rolling time-period as determined at the end of each calendar month. The facility has been producing between 250,000 – 320,000 tons per 12-month rolling time-period.

The permit limit is 500 tons of HMA paving materials in EU-HMAPLANT per hour based on a daily average, which is determined by dividing the daily HMA production by the daily production hours. The facility has been producing approximately 260 – 360 tons per hour.

III. PROCESS/OPERATIONAL LIMITS

The fugitive dust control plan for EU-YARD specified in Appendix A appears to be implemented and maintained based on facility records and the site inspection. Records show routine applications occurring at least twice a day at minimum (watering/chloride applications and sweeping of the facility's roadways). The Preventative Maintenance Program specified in Appendix B appears to be implemented and maintained based on facility records and the site inspection regarding the facility's inventory of bags on-site and the daily and seasonal start-up visual inspections. The Emission Abatement Plan for Startup, Shutdown in Appendix C also appears to be implemented and maintained. The facility maintains an acceptable plan regarding startups, shutdowns and malfunctions with

normal startup and shutdown procedures by observing processes such as temperature changes of the silos, production limits, and the aggregate timer for the drum mix.

The fabric filter pressure drop was viewed as 3.2 inches H₂O the day of inspection and is recorded daily, and is equipped with a high temperature sensor and alarm system. The alarm system sounds when the high temperature set-point has been exceeded at 390 F which prevents the filter bags from igniting. A black light inspection occurred on April 14, 2023, at the onset of the paving season and the facility maintains a fabric filter dust collector inspection log.

Weigh scales are calibrated and an alarms sound when the facility approaches the permitted limit of HMA tons produced. The facility maintains maintenance logs and procedures are documented regarding malfunctions and the items inspected. The facility has not burned recycled used oil per the Compliance Monitoring in Appendix D. The efficiency of the drum mix burners are adjusted to ensure proper burner operation and to control CO emissions. Maintenance logs indicate efficiency checks for drum mix burners each year at the start (April 19, 2023) and the end of each season.

IV. DESIGN/EQUIPMENT PARAMETERS

The fabric filter dust collector is installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the fabric filter dust collector requires a pressure drop range between 2 and 8 inches of water column. Daily pressure drops vary between 3.0 – 4.5 inches H₂O and 3.2 inches H₂O were observed the day of inspection.

V. TESTING/SAMPLING

Stack testing per the New Source Performance Standards, 40 CFR 60, Subparts A and I, occurred on July 18, 2018, for particulate emission rates and opacity (Method 9) tests were conducted:

- PM Mass Emission Rate: 1.74 lb/hr
- PM Mass Emission Rate: 0.004 lb/ton HMA (Permit Limit is 0.05)
- Exhaust Gas PM Content: 0.005 gr/dscf (Permit Limit is 0.04)
- 6-minute Avg. opacity: 0.1% (Permit Limit 20%)

The facility has not used recycled used oil, nor have they been required to verify and quantify emissions and odors associated with its operations.

VI. MONITORING/RECORDKEEPING

Both the virgin aggregate feed rate and the RAP feed rate are monitored on a continuous basis via controls by the facility operator providing production totals every 15 minutes – which generates a daily total. The facility monitors CO emissions with readings occurring every 500 hours. The most recent monitoring event occurred on April 19, 2023, as follows (ppm): 196, 198, 201, 202, 207, 209, 211, and 213. The facility maintains and operates in a

satisfactory manner a pressure monitoring device to monitor the pressure drop across the fabric filter dust collector once per day (3.2 inches H₂O at the time of inspection).

A maintenance log of all maintenance activities and repairs is maintained (black light tests and filter bag inspection), and the drum mixer/burner components operate in a satisfactory manner by tuning the burners according to the stack temperature (the tuning of the burners was not viewed at the time of inspection).

The facility has not burned recycled used oil and monitors the hot mix asphalt containing RAP (including the average percentage per ton produced). The average monthly RAP HMA produced varies between 10,000 and 25,000 tons with the average percent of RAP/RAS per ton of HMA between 25% and 45%. The daily virgin aggregate feed rate is recorded every 15 minutes in which daily printouts are made. The daily RAP/RAS feed rate varies between 100 – 1,200 tons per day.

Daily HMA product temperature records indicate temperatures range between 250 and 360 F on average. The facility indicates the components of the paving material mixture on file for each mix design and the time each design is activated. Mixes include 5E3 (vehicle mainline), 4E3 (road shoulder), and 1100 leveling (sub-base).

Below are the pollutants listed in Section I of the Emission Limit Table (the facility only operated for one-half the month of April and May records were not required to be completed at the time of inspection). The permit requires monthly and 12-month rolling time-period totals for the following pollutants:

Pollutant	April 2023 (tons) unless otherwise noted	12-month rolling (tons)
PM	0.01	0.49
PM 10	0.17	9.87
PM 2.5	0.10	11.26
CO	0.43	24.67
CO	0.43	24.67
SO ₂	0.26	14.80
NO _x	0.17	9.87
Lead	0.00003	0.0019
Benzene	0.00215	0.12
Toluene	0.0129	0.74
Ethylbenzene	0.00215	0.12
Xylene	0.00215	0.12
Naphthalene	0.00215	0.12
Formaldehyde	0.0215	1.23
Acrolein	0.00215	0.12
Arsenic	0.000002	0.00012
Nickel	0.00021	0.012
H ₂ SO ₄	0.032	1.85
Mn	0.00010	0.0062
Hydrogen Chloride	0.0430	2.46

Average daily totals in April 2023 vary between 200 tons and 300 tons per hour. Average monthly totals for 2022 vary between 300 tons and 400 tons. Average 12-month rolling time-period totals are approximately 250,000 tons.

VII. REPORTING

The facility has not modified, relocated, or reconstructed any equipment within EU-HMAPLANT.

VIII. STACK/VENT RESTRICTIONS

There were no visible emissions emanating from the facility's stack at the time of inspection.

EU-YARD

III. PROCESS/OPERATIONAL LIMITS

The fugitive dust control plan control in appendix A appears to be implemented and maintained. The facility maintains records of monthly dust suppressant activities such as yard sweepings and waterings.

VI. MONITORING/RECORDKEEPING

The facility reports their annual emissions of particulate matter for EU-YARD via MAERS. The facility used MAERS emission and U.S. EPA emission Factors (AP-42) in their 2023 submittal.

VII. REPORTING

The facility provided annual emissions from EU-YARD using the MAERS emission factor of 6.2 lb/mile with 80% control efficiency per the AQD MAERS HMA guidance document resulting in 14,934 lbs of PM₁₀.

EU-ACTANKS

III. PROCESS/OPERATIONAL LIMITS

The vapor condensation and recovery system are implemented and maintained by the facility and inspected at least once during the operating season. The facility inspects the integrity of the structure and filter media and indicates replacement occurs every few years. There are no moving parts or monitoring devices associated with the tanks. The liquid asphalt temperature is set at approximately 550 F to ensure proper mixture when combined with the aggregate. No detectable cracks or leaks were observed.

EU-SILOS

III. PROCESS/OPERATIONAL LIMIT

The emission capture system at the top of each storage silo appears to be implemented and maintained by the facility. All silo load activities occur in an area that is permanently

enclosed except for truck entrance and exit points. Emissions collected from the truck load-out area are vented into the burning zone.

FG-FACILITY

I. Emission Limits

The CO limit is 89.9 tons/yr for a 12-month rolling time-period as determined at the end of each calendar month and the current total is 25 tons/yr.

Each individual HAP is to be less than 9.0 tons/yr for a 12-month rolling time-period as determined at the end of each calendar month. The HAP with the highest emission limit is Hydrogen Chloride which varies each between 0.05 and 0.5 tons per month, with a 12-month rolling total of 2.46 tons.

Aggregate HAPs are to be less than 22.5 tons/yr for a 12-month rolling time-period as determined at the end of each calendar month. The current aggregate HAP total in April 2023 is 0.12 tons and the aggregate 12-month rolling total is 6.88 tons.

Conclusion

Based on the AQD inspection and records review, Ajax Materials is in compliance with the aforementioned requirements and conditions of the facility's Permit to Install (PTI) 75-17.

NAME Robert Joseph

DATE 06-21-23

SUPERVISOR Joyce