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

B165667390

FACILITY: Gold Bond Building Products		**SRN / ID:** B1656
LOCATION: 2375 S NATIONAL CITY RD, NATIONAL CITY		**DISTRICT:** Bay City
CITY: NATIONAL CITY		**COUNTY:** IOSCO
CONTACT: Dennis Revord , Environmental Health and Safety Manager		**ACTIVITY DATE:** 05/10/2023
STAFF: Nathanael Gentle	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Scheduled Onsite Inspection FY23		
RESOLVED COMPLAINTS:		

On May 10, 2023, AQD staff conducted a scheduled onsite inspection at Gold Bond Building Products, SRN B1656. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environment Great Lakes and Energy, Air Quality Division (AQD) and to determine compliance with the facility's Permits to Install (PTI). AQD staff were assisted onsite by Mr. Dennis Revord. At the time of inspection, the facility was found to be in compliance.

Facility Description and History

Gold Bond Building Products is located at 2375 South National City Rd, National City, MI 48748. The facility is largely surrounded by forested land. Nearby residences are located south and southwest of the facility.

Gold Bond Building Products is an affiliate of National Gypsum Company. The facility manufactures gypsum wallboard products utilizing naturally occurring gypsum acquired from a quarry operated by Gold Bond Building Products located on S Sand Lake Rd, north of the wallboard plant. The wallboard products consist of gypsum, starch, and soap between two sheets of paper. Mold and moisture resistant products have silicone added.

A total of eleven active Permits to Install are associated with the facility. These PTIs include, PTI No. 282-74, PTI No. 8-75, PTI No. 9-75, PTI No. 10-75, PTI No. 154-76, PTI No. 155-76, PTI No. 156-76, PTI No. 157-76, PTI No. 158-76, PTI No. 356-95, and PTI No. 73-98D.

Gold Bond Building Products is a minor source of all regulated air pollutants. Historically the facility operated under the 208A program. Following the end of the 208A program, a potential to emit (PTE) evaluation was completed in 2014. The PTE determined all emission units with their existing pollution controls are below major source thresholds. The facility is subject to 40 CFR Part 60 Subpart OOO—Standards of Performance for Nonmetallic Mineral Processing Plants.

No recent complaints are on file for the facility. The facility was last inspected in December 2013. At the time of the 2013 inspection, the facility was found to be in compliance. One new Permit to Install has been issued since the last inspection. PTI No. 73-98D was issued on 6/5/2018 for modifications to EUBOARDKILN. Annual emissions from the facility are reported to the Michigan Air Emissions Reporting System (MAERS). Emission reports for the facility have historically been submitted on time and complete.

Gypsum is trucked to the facility and stored at an outdoor storage pile. From there, gypsum is fed into the gypsum rock dryer where free moisture is removed. Upon exiting the rock dryer, material is fed into a crusher located inside the facility where the gypsum is broken into smaller pieces. Dust from the crusher is fed back into the rock dryer. The crushed gypsum is then transferred and stored in the dry rock bin. From the dry rock bin, material is fed into the Raymond mill where material is ground into a fine powder known as land plaster. Air is blown up through the Raymond mill. Once material is ground down to the desired size, it is picked up into the air current. The air flow passes through a cyclone in which land plaster is dropped out into the land plaster bin. Land plaster is transferred from the land plaster bin to one of three Calcidyne calciners. The Calcidyne calciners are cyclone flash dryers used to remove bound up moisture. Once the bound moisture is removed, the material is known as stucco. Stucco exiting the Calcidyne calciners is transported through a screw conveyor system known as the hot stucco transfer equipment. The stucco is transferred to the stucco cooling bin, also known onsite as Harry's bin, where it further cools. From the stucco cooling bin material is transferred to the stucco storage bin.

Stucco is drawn from the stucco storage bin to the board plant. The stucco is mixed with water, soap, and silicone if applicable, to form the mixture which is spread onto a paper sheet. The wet material is squared before a top sheet of paper is placed on top. The wet wall boards are then conveyed towards the board kiln. While being conveyed toward the board kiln, the material is able to partially dry and be cut to size. The boards are then passed through the board kiln. Within the kiln, the boards are passed through a variety of temperature zones allowing the boards to dry and harden. The dried boards are trimmed in the board end trim saw. Once boards are hardened and trimmed to size, product labels are applied, and the boards are packaged into bundles for sale.

Compliance Evaluation

Permit conditions associated with the stucco production process are largely focused on particulate matter, PM. Baghouse controls were verified to be equipped with differential pressure sensors. Staff report as part of onsite operation activities, the differential pressure is monitored at least once a week for all baghouses. If the differential pressure is observed to be outside the desired range, the control equipment is evaluated and repaired if necessary. Additionally, staff visually monitor for opacity from process stacks. An inventory of replacement bags is maintained onsite for each dust collector. Collected dust is fed back into the process.

As part of the onsite inspection, AQD staff monitored process stacks for opacity. No opacity in excess of permit limits was noted during the inspection.

Gypsum Rock Dryer

The gypsum rock dryer is permitted under PTI No. 10-75. The unit is operated at approximately 170°F. The rock dryer is used to remove free moisture from the gypsum material. The goal is to pull free moisture off the material without cooking the material, resulting in what onsite staff refer to as dead burn. The dryer is equipped with a pulse jet fabric filter for PM control. An opacity limit of 20% is in place for the emission unit, Special Condition (S.C.) 7. The dust collector

is equipped with a magnehelic differential pressure sensor. At the time of inspection, the differential pressure was observed to be just above 1" H_2O.

The maximum allowable PM emission rate for the gypsum rock dryer is 0.20 pounds of particulate per 1,000 pounds of gas, S.C.5. Verification of emission rates is required upon request. At this time, stack testing to verify emission rates has not been requested.

Dry Rock Bin

Material that has been dried in the rock dryer is crushed and sent to the dry rock bin. The dry rock bin is permitted under PTI No. 356-95. The particulate emission from the dry rock bin shall not exceed 0.10 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis, nor 0.47 pound per hour, nor 2.1 tons per year, S.C.15. Stack testing to verify emission rates is required at the request of the district. At this time, stack test verification has not been requested. Visible emissions from the dry rock bin shall not exceed a 6-minute average of 5% opacity, S.C.18.

The dry rock bin is equipped with a baghouse for PM control. The baghouse is equipped with a magnehelic differential pressure sensor. At the time of inspection, the differential pressure was observed to be 6" H_2O. Baghouse filters for the dry rock bin are changed on an as needed basis based on the observed differential pressure and opacity observed from the stack vent.

Raymond Mill

Raymond mill is permitted under PTI 9-75. The mill utilizes rollers in a bowl wheel to grind the gypsum into a powder, known as land plaster. The maximum allowable particulate emission rate for the mill is 0.10 pounds particulate per 1,000 pounds gas calculated on a dry basis, S.C.5. Testing to verify the emission rate is required upon request of the district. At this time stack testing has not been requested. Visible emissions are limited to an opacity of less than or equal to 20%, S.C.7.

PM emissions from the Raymond mill are controlled by a baghouse. The baghouse is equipped with a magnehelic differential pressure sensor. At the time of inspection, the differential pressure was observed to be 2" H_2O.

Land Plaster Equipment

The land plaster equipment is permitted under PTI No. 155-76. Land plaster picked up in the air current of the Raymond mill is carried up into a cyclone where the land plaster drops out into the land plaster bin. The particulate emissions rate from the land plaster equipment shall not exceed 0.10 pounds per 1,000 pounds of exhaust gas, calculated on a dry basis, S.C.12. Testing to verify the emission rate is required upon request of the district. At this time stack testing has not been requested.

PM emissions from the land plaster equipment are controlled by a baghouse. The baghouse is equipped with a differential pressure sensor. At the time of inspection, the differential pressure was observed to be 2.7" H_2O.

Visible emissions from the land plaster equipment are limited to an opacity of less than or equal to 20%, S.C.13. At the time of inspection opacity was observed to be exiting the stack vent

associated with the land plaster equipment. AQD staff observed the opacity to be around 5%. Onsite staff noted the opacity and communicated its presence with facility maintenance personnel. Opacity in excess of the permitted limit of 20% was not observed.

Calcidyne Calciners

Land plaster is transported from the land plaster bin via elevator to one of the three Calcidyne calciners. The Calcidyne calciners are natural gas fired flash cyclone dryers that remove bound up moisture. Once the bound-up moisture is removed, the material is known as stucco.

Calcidyne calciner #1 is permitted under PTI No. 154-76. Calcidyne calciner #2 is permitted under PTI No. 157-76. Calcidyne calciner #3 is permitted under PTI No. 156-76. The calciners are three identical Calcidyne Model 10,000 Type S calciners. The particulate emission rate from the Calcidyne calciners shall not exceed 0.10 pounds per 1,000 pounds of exhaust gases. Stack testing to verify emission rates is required at the request of the district. At this time stack testing has not been requested for any of the Calcidyne calciners. Visible emissions from each of the Calcidyne calciners are limited to an opacity of less than or equal to 20%.

Each of the Calcidyne calciners are equipped with a Flex-Kleen Model 84 RA fabric filter for PM emission control. The fabric filters are each equipped with a rotohelic differential pressure sensor. At the time of inspection, the differential pressure of the filters associated with Calcidyne calciner #1 was observed to be 5" H_2O. The differential pressure of the filters associated with Calcidyne calciner #2 was observed to be 3" H_2O. The differential pressure of the filters associated with Calcidyne calciner #3 was observed to be 4.9" H_2O. Staff reported the filter bags on Calcidyne #2 were changed approximately one month prior.

Hot Stucco Equipment

Hot Stucco from the Calcidyne calciners is transferred via screw conveyer in a system referred to as hot stucco equipment. The equipment is permitted under PTI No. 158-76. Stucco begins to cool as it is transferred in the screw conveyor. The system is equipped with a Mikro-Pulsaire Model 64S-6-20 fabric filter for collecting dust from the system. The baghouse is equipped with a magnehelic differential pressure sensor. At the time of inspection, the differential pressure was observed to be 3" H_2O.

Stucco Cooling Bin

Stucco is transferred from the Calcidyne calciners via the hot stucco equipment to the stucco cooling bin. The stucco cooling bin is permitted under PTI No 356-95. Onsite staff also refer to the stucco cooling bin as Harry's bin. The stucco cooling bin is used to further cool down the stucco. Particulate emissions from the stucco cooling bin are controlled by a baghouse, S.C.20. The baghouse is equipped with a magnehelic differential pressure sensor. At the time of inspection, the differential pressure was 2.5" H_2O.

The particulate emission from the stucco cooling bin shall not exceed 0.10 pounds per 1,000 pounds of exhaust gases, calculated on a dry basis, nor 0.28 pounds per hour, nor 1.23 tons per year, S.C. 16. Testing to verify emission rates is required at the request of the district. At this time

testing has not been requested. Visible emissions from the stucco cooling bin shall not exceed a 6 -minute average of 5% opacity, S.C.18.

Stucco Storage Bin

Cooled stucco that will be used in the board plant is transferred from the stucco cooling bin to the stucco storage bin. The stucco storage bin is permitted under PTI No. 356-95. Particulate emissions from the stucco storage bin are controlled by a baghouse, S.C.20. The baghouse is equipped with a magnehelic differential pressure sensor. At the time of inspection, the differential pressure was 4.5" H_2O.

The particulate emission from the stucco storage bin shall not exceed 0.10 pounds per 1,000 pounds of exhaust gases, calculated on a dry basis, nor 1.44 pounds per hour, nor 6.3 tons per year, S.C. 17. Testing to verify emission rates is required at the request of the district. At this time testing has not been requested. Visible emissions from the stucco storage bin shall not exceed a 6 -minute average of 5% opacity, S.C.18.

Board Kiln

EUKILN is a 64 MMBtu/hr natural gas-fired kiln dryer used to dry wallboard products produced at the facility. These products include regular wallboard, Silicone XP wallboard, and eXP wallboard. EUKILN is permitted under PTI No. 73-98D which was issued in 2018. PTI 73-98D was issued for the modification of the burners on EUKILN, to allow the production of eXP wallboard, and to remove the usage of ammonium sulfate. Additionally, the PTI modification updated the facility's formaldehyde and volatile organic compounds (VOC) emission limits.

Hourly emission rate limits are in place for EUKILN. These emission rate limits include 5.58 pph NOx, S.C.I.1., 2.44 pph formaldehyde (CAS No. 50-00-0), S.C.I.2., and 11.69 pph VOC, S.C.I.4. Verification of compliance with the hourly emission rates shall be performed at the request of the district supervisor, S.C.V.1. At this time testing to verify the emission rates has not been requested.

The board plant is equipped with a silicone flow meter to track the amount of silicone used in the process. Silicone products were not being produced on the day of inspection. Special Condition II.1. states that the permittee shall not use more than 8 lbs of silicone per thousand square feet of wallboard in EUKILN. Records maintained by the facility track the pounds of silicone used per thousand square feet of silicone wallboard produced each calendar day. The largest amount of silicone used per thousand square feet of silicone containing wallboard was 7.5lbs/MSF. This value is below the permitted limit of 8lbs of silicone per thousand square feet of wallboard. It is important to note, the permitted limit pertains to the amount of silicone used in relation to the total amount of wallboard produced, including products not containing silicone. If the calculation used by the facility were to account for all wallboard products rather than just silicone containing products, the lbs of silicone per thousand square feet of wallboard would be much lower. Facility staff report silicone containing wallboard accounts for approximately 25% of production at the facility. AQD staff recommended the facility maintain monthly records documenting the amount, in lbs, of silicone used in relation to the total amount of wallboard produced, in thousand square feet, moving forward.

The facility tracks and maintains records for the daily hours in which silicone containing boards are produced as well as daily hours in which non silicone containing boards are produced. These values are used to track and calculate VOC and formaldehyde emissions. Emission factors used to calculate VOC and formaldehyde emissions are the same emission factors used in permitting. The emission factors were reported to be developed from previous stack tests performed at facilities in other states. The throughput is based on the line speed (feet/min) of kiln producing the final product, and the weight (lbs/1000ft^2) and width (ft) of the wallboard produced.

Separate VOC emission factors are used for silicone vs non silicone containing wallboard. Daily VOC emissions are calculated from silicone and non-silicone board and summed. Monthly VOC emissions are tabulated at the end of each month. At the time of inspection 12 month rolling VOC emission records were not being tabulated. Looking at monthly VOC emission records, the highest monthly emissions occurred at the end of March 2023 with 1969.18438lbs emitted. Assuming this monthly value over 12 months equates to 11.82 tpy of VOCs emitted. This is well below the permitted limit of 35.29 tpy, S.C.I.5. During calendar year 2022 a total of 10.54 tons of VOCs were emitted. Based on the records provided by the facility, the facility appears to be well below the 12-month rolling VOC limit of 35.29 tpy. AQD staff instructed onsite personnel to maintain 12-month rolling records moving forward.

Emissions of formaldehyde are calculated based on the total hours in which silicone containing boards are produced. The facility was able to provide monthly records of formaldehyde emissions. At the time of inspection 12-month rolling formaldehyde emission records were not being calculated. Review of the monthly records shows the highest monthly emissions occurred at the end of February 2023 with 168.343 lbs of formaldehyde emitted. Assuming this monthly value over 12 months equates to 1.01 tpy of formaldehyde emitted. This is well below the permitted limit of 5.92 tpy, S.C.I.3. During calendar year 2022 a total of 0.64 tons of formaldehyde was emitted. Based on the records provided by the facility, the facility appears to be well below the 12-month rolling formaldehyde limit of 5.92 tpy. AQD staff instructed onsite personnel to maintain 12-month rolling records moving forward.

As previously mentioned, usage of ammonium sulfate was removed from the facility's permit during the most recent modification. Onsite staff confirmed the facility no longer uses ammonium sulfate in their products. During review of the facility's emission records AQD staff noted a column titled daily ammonium sulfate usage. The column had values filled in as recent as 4/26/2023. Values in the column were 1, 5/8, or 1/2. Additionally, these values occurred on days in which silicone containing wallboard was produced. Onsite staff explained the column was empty and they began using it to track the thickness of silicone wallboard produced on days in which silicone wallboard was produced. AQD staff asked that the facility rename the heading of the column moving forward to correlate with the values recorded.

Gypsum Trimming Saws, Recutting Machines, and Paper Separator

Once boards are dried, they are cut to size in the board end trim process. The process is permitted under PTI No. 8-75. Scraps from the trimming process are recycled and sold to be used for soil amendments. The maximum allowable particulate emission rate for gypsum trimming saws and recutting machines is 0.10 pounds particulate per 1,000 pounds gas calculated on a dry gas basis, S.C.5. Stack testing to verify the emission rate is required at the request of the district.

At this time, stack testing has not been requested. Visible emissions are limited to an opacity of less than or equal to 20%. PM emissions from the board end trim process are controlled by a low-pressure cyclone and a baghouse. The baghouse is equipped with a magnehelic differential pressure sensor. At the time of inspection, the differential pressure was 5.5" H_2O.

Summary

On May 10, 2023, AQD staff conducted a scheduled onsite inspection at Gold Bond Building Products, SRN B1656. Gold Bond Building Products is located at 2375 South National City Rd, National City, MI 48748. The facility manufactures gypsum wallboard products utilizing naturally occurring gypsum acquired from a quarry operated by Gold Bond Building Products located north of the wallboard plant on S Sand Lake Rd. Gold Bond Building Products is a minor source of all regulated air pollutants. A total of eleven active Permits to Install are associated with the facility. At the time of inspection, the facility was found to be in compliance.

Nathanael Gentle
NAME

DATE 6/8/2023

SUPERVISOR Chris Hare