

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

N737869573

<b>FACILITY:</b> Tip-Top Screw Manufacturing Inc		<b>SRN / ID:</b> N7378
<b>LOCATION:</b> 4183 FORREST STREET, OSCODA		<b>DISTRICT:</b> Bay City
<b>CITY:</b> OSCODA		<b>COUNTY:</b> IOSCO
<b>CONTACT:</b> Mike Matthews , corporate safety officer		<b>ACTIVITY DATE:</b> 10/12/2023
<b>STAFF:</b> Nathanael Gentle	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MINOR
<b>SUBJECT:</b> Scheduled Onsite Inspection FY24		
<b>RESOLVED COMPLAINTS:</b>		

On October 13, 2023, AQD staff conducted a scheduled onsite inspection at Tip-Top Screw Manufacturing, SRN N7378. 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) Administrative Rules; and to evaluate compliance with the facilities Permit to Install, PTI No. 289-06A. EGLE staff were assisted onsite by Mr. Jared Coppinger, Production Control Manager. Requested records were provided by Mr. Michael Matthews, Director of Safety, and Kaitlyn O'Connor, HR Generalist. At the time of inspection, the facility was found to be in compliance.

### Facility Background and History

Tip-Top Screw Manufacturing is located at 4183 Forest Street Oscoda, MI 48750. The facility specializes in the manufacturing of roofing fasteners used in commercial roofing. The process begins with spools of steel wire. The material is fed through one of two machines called cold headers. The cold headers shape the material into a screw shape with the head, shaft, and point. From the cold header, the screws are fed through one of four thread rollers. The thread rollers create the threads on the screws. In addition to the cold headers and thread rollers, the facility operates an AMBA automated all-in-one screw manufacturing machine. Fabricated screws are all hardened in the facilities heat treat process. Once the screws are hardened and cooled, all screws are coated in an E-Coat system.

Tip-Top Screw Manufacturing is a minor source of particulate matter (PM) and volatile organic compounds (VOCs). One active Permit to Install (PTI) is associated with the facility, PTI No. 289-06A. PTI No. 289-06A was issued on February 4, 2008. The permit includes the onsite heat treat process and its associated anhydrous ammonia storage tank. The E-Coat system is operated as exempt from needing a PTI based on AQD exemption Rule 336.1290, also known as Rule 290. The facility was last inspected on January 29, 2015. At the time of the 2015 inspection, the facility was found to be operating in compliance.

On April 6, 2023, the AQD received a Transfer of Ownership Notification for Tip-Top Screw Manufacturing, in accordance with General Condition 5 of PTI No. 289-06A and Rule 336.1219. The facility was purchased by Holcim Solutions and Products (US), LLC (Holcim S&P). Holcim S&P is located at 26 Century Boulevard, Suite 205, Nashville, Tennessee. All responsibility, coverage and liability were transferred to Holcim S&P on April 1, 2023. The facility continues to be operated under the name Tip-Top Screw Manufacturing.

## Compliance Evaluation

### Fabrication

Equipment used for the fabrication of the fasteners includes, cold headers, thread rollers and an AMBA automated all-in-one screw manufacturing machine. Two cold headers are operated at the facility. The units are vented to the ambient air. Each cold header unit was observed to be equipped with a SmogHog control device. The SmogHog is an electrostatic precipitator. Four thread rollers are operated at the facility. Each thread roller was observed to be vented to the ambient air. The cold headers and thread rollers appear to meet the PTI exemption requirements of Rule 285(I)(i). A SmogHog was observed to be installed above the fabrication portion of the facility. The SmogHog was reported to be in place for the purpose of cleaning the indoor air. Exhaust from the SmogHog was vented to the in-plant environment. Staff report the filters and screens on all the SmogHog units are cleaned and replaced once a week. The facility utilizes a device designed to clean the SmogHog components, similar to a dishwasher.

Currently the facility operates one AMBA automated all-in-one screw manufacturing machine. Staff explained future improvements to the facility may include the purchase of another unit. The unit is an automated machine which produces screws of varying lengths from spools of steel wire. Emissions from the unit are released to the in-plant environment. The AMBA appears to meet the PTI exemption requirements of either Rule 285(I)(i), or Rule 285(I)(vi).

In addition to the fastener fabrication equipment, the facility was observed to have a welding and metal fabrication area. Equipment in the area was vented to the in-plant environment. The welding equipment is exempt from permitting under Rule 285(i). The miscellaneous metal fabrication equipment appears to meet the exemption requirements of Rule 285(I)(vi).

### EU-Heat Treat

Fabricated screws are all hardened in the facilities heat treat process. EU-Heat Treat is permitted by PTI No. 289-06A. The heat treat process consists of a hardening (batch) furnace with an internal quench oil bath, a hot water wash station, and a tempering furnace. Screws are hand loaded onto racks. The racks are then sent to the hardening oven where they are heated to 1550° F. Following the hardening furnace, screws are quenched in an oil bath for 35 minutes. Following the oil quench, screws are washed with hot water for another 35 minutes. Finally, the screws are tempered in the tempering furnace. The tempering furnace is natural gas fired and heated to 400° F. Gases including nitrogen, ammonia, and natural gas are used as part of the tempering process. The tempering furnace is equipped with a catalyst which reacts with the gases to create the appropriate atmosphere for the tempering process.

The permittee shall not operate the hardening furnace and the oil quench bath portions of EU-Heat Treat unless the effluent burner and inlet flame curtain are both installed, maintained, and operated in a satisfactory manner, Special Condition (S.C.) 1.4. Both the effluent burner and inlet flame curtain were observed to be in place and operating. A visible flame could be observed for each. Staff report the flames of each are tuned approximately every 6 months. The flames are tuned by adjusting the fuel flow. In addition to tuning the flame, both the effluent burner and inlet flame curtain are cleaned once a year as part of preventative maintenance.

The tempering furnace portion of EU-Heat Treat was observed to be equipped with a SmogHog air pollution control system, S.C.1.3. Staff report the SmogHog is monitored every shift as part of shift checklists to ensure the unit is operating properly while the tempering furnace is in operation. Screens and filters on the SmogHog are cleaned weekly.

Emission limits for particulate matter (PM) are in place for the tempering furnace portion of EU-Heat Treat. Emission limits include 0.05 lbs per 1000lbs of exhaust gases calculated on a dry gas basis for PM, S.C.1.1a., and 1.35 pounds per hour PM-10, S.C.1.1b. Performance testing to verify emission rates is required at the request of the AQD. At this time, performance testing has not been requested. In addition, the visible emissions from the tempering furnace portion of EU-Heat Treat shall not exceed a six-minute average of ten percent opacity, S.C.1.2. At the time of inspection, onsite procedures were not in place for monitoring the stack vent for opacity. Staff report the only visual emission from the stack is steam generated at the initial phase of the temper operation where steam is released. Weekly proper maintenance of the SmogHog prevents opacity from the horizontal discharge point. Staff report moving forward the facility will conduct EPA Method 22 observations on a weekly basis.

### EU-AmmoniaTK

EU-AmmoniaTK is a 1500-gallon capacity horizontal anhydrous ammonia storage tank. Ammonia is used as part of the tempering furnace portion of the heat treat process. The storage tank is located outside the facility in a locked, fenced off area.

Onsite staff report EU-AmmoniaTK is inspected monthly by onsite maintenance staff utilizing the procedures specified in Appendix A of PTI No. 289-06A, S.C.2.2. Staff report repairs are made if identified during the inspection. A copy of the most recent inspection was provided. Onsite staff last inspected the tank on 9-29-2023. Deficiencies were found during the inspection including, not having the proper PPE available onsite, pipes were determined to not be properly supported and free of physical damage and rust, the area was not free of weeds, trash, and other unsafe conditions. Staff reported the deficiencies were promptly addressed. A receipt was provided documenting the materials that were purchased on 9/29/2023 which included PPE, tubing, fittings, a pressure gauge, and new warning signs. Pictures were provided to show the area was cleaned up and free of weeds. Additionally, the area appeared clean during the onsite inspection.

EU-AmmoniaTK is reported to have been installed to meet the permit requirements, including those stipulated in S.C. 2.5, 2.6, and 2.7. Transport deliveries of the anhydrous ammonia are performed by the vendor, Tanner Industries, S.C.2.4. Staff report the tank is refilled approximately two times a year.

In addition to inspections completed by onsite staff, the tank is inspected by the supplier, Tanner Industries, at the time of delivery. A copy of the most recent tank inspection checklist from Tanner Industries was provided. Inspection by Tanner Industries was last completed on 2/16/2022. Components inspected include switches, valves, and gauges. A leak check using Litmus Paper was performed. Valve stems were lubricated and exercised. The three-way valve was tested for operation. Conditions of the paint and vaporizer assembly were determined to be fair. Two pressure relief valves were replaced. The parts have a manufacturing date of 11/30/2020 and have an expiration date of 11/30/2025. The hydrostatic relief valve was recorded to have a manufacture date of 4/30/2018 and an expiration date of 4/30/2023. The valve was not

expired during the time inspection by Tanner Industries. Special Condition 2.5. states that safety relief valves shall be replaced, or re-tested and recertified, at least every five years or more often if there is evidence of damage or deterioration. AQD staff inquired as to whether the hydrostatic relief valve had been replaced since the inspection completed by Tanner Industries on 2/16/2022. Facility staff confirmed the valve had not changed and promptly contacted their vendor. Tanner Industries said the valve can only be replaced when the tank is empty. At the time of correspondence, the tank was 30% filled. Staff report they anticipate the tank will be empty in early 2024. At that time the valve will be replaced. All hoses used for anhydrous ammonia shall be replaced five years after the date of manufacture, S.C. 2.8. Staff report there are no hoses on the tank.

### E-Coat Line

Once screws are heat treated, they are coated in the facility's E-coat line. The system is an electrodeposit system in which 2-part water-based paint is applied to the fasteners. Stage one of E-Coat line is a soap tank to clean the screws in preparation for coating application. Stages 2,3,4, and 5 are water rinses. Stage 6 is a conditioner stage. In stages 7 and 8 a zinc-phosphate rust preventative is applied. Stage 9 is a rinse tank. In stage 10 a fluoride-based sealer is applied. Stages 10 and 11 are D.I. water. Stage 12 is R.O. water. Stage 13 is the paint application stage. Stage 13 is followed by 3 rinses with R.O. water. The coated parts are passed through a curing oven with a temperature of 350°F. From there they pass through a cooling tunnel. Once cooled the parts are unloaded and ready for sales.

Facility staff report coatings used in the process include, Powercron XP Black Paste and Powercron Resin. The E-Coat system is capable of tracking daily paint usage. Staff report both the square feet of paint used and the volume in gallons is automatically tracked. These number are recorded daily by onsite staff.

At the time of permitting, VOC emissions from the E-Coat line were determined to meet the requirements of PTI exemption Rule 290. As part of the onsite inspection, records demonstrating compliance with the requirements of Rule 290 were requested for the most recent 6-month period. Additionally, copies of SDS's for all products used in the E-Coat system were requested and reviewed. SDS's were provided for the following products, Chemfil Buffer, Chemfos 700RW, Chemfos Liquid Additive, Chemkleen 611L, Chemseal 59, Powercron Resin, Powercron XP Black Paste, and Rinse Conditioner GL. In the Rule. 290 records provided, only one VOC was identified and tracked for the E-Coat process, bis(2-(2-butoxyethoxy)ethoxy)methane from the Powercron Resin. In review of the SDS's provided it appeared additional VOCs are present in the process. Products appearing to contain VOCs and their associated VOCs include:

#### **CHEMKLEEN 611L**

- Oxirane, 2-methyl-, polymer with oxirane CAS # 9003-11-6
- 2-ethylhexanoic acid CAS # 149-57-5

#### **CHEMSEAL 59**

- 2,2',2''-nitrioltriethanol CAS # 102-71-6

- 2,2'-Iminodiethanol CAS # 111-42-2
- POWERCRON RESIN**
- bis(2-(2-butoxyethoxy)ethoxy)methane CAS # 143-29-3
- POWERCRON XP BLACK PASTE**
- 3-butoxypropan-2-ol CAS # 5131-66-8
  - dibutyltin oxide CAS # 818-08-6

A request was sent to the facility asking that the VOC tracking spreadsheet be updated to include all VOC emissions from the E-Coat line to demonstrate the emission unit meets the exemption requirements of Rule 290. Facility staff updated the spreadsheet to include all VOCs present in the E-Coat line process. Updated records of VOC emissions for the period of April 2023 to September 2023 were provided. Monthly VOC totals during the period reviewed ranged from 256.88 lbs/month to 326.55 lbs/month. AQD staff reviewed each VOC and verified none of the compounds are assigned an initial risk screening level (IRSL). Based on the updated records provided, the E-Coat line emission unit appears to meet the exemption requirements of R290(a) (i).

### Summary

On October 13, 2023, AQD staff conducted a scheduled onsite inspection at Tip-Top Screw Manufacturing, SRN N7378. Tip-Top Screw Manufacturing is located at 4183 Forest Street Oscoda, MI 48750. The facility specializes in the manufacturing of roofing fasteners used in commercial roofing. Tip-Top Screw Manufacturing is a minor source of particulate matter (PM) and volatile organic compounds (VOCs). One active Permit to Install (PTI) is associated with the facility, PTI No. 289-06A. The PTI encompasses the onsite heat treat process and its associated anhydrous ammonia storage tank. The onsite fabrication activities and an E-coat line operate as exempt from needing a PTI. At the time of inspection, the facility was found to be in compliance.

NAME

DATE 11/6/2023

SUPERVISOR

