

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection

P074251455

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|--|-------------------------------|---------------------------|
| FACILITY: Siliconature Corporation                                     |                               | SRN / ID: P0742           |
| LOCATION: 4255 68th Street SE, CALEDONIA                               |                               | DISTRICT: Grand Rapids    |
| CITY: CALEDONIA  |                               | COUNTY: KENT              |
| CONTACT: Mateo Dal Mas, Plant Manager                                  |                               | ACTIVITY DATE: 11/06/2019 |
| STAFF: April Lazzaro   | COMPLIANCE STATUS: Compliance | SOURCE CLASS: SM OPT OUT  |
| SUBJECT: Unannounced, scheduled inspection and stack test observation. |                               |                           |
| RESOLVED COMPLAINTS:   |                               |                           |

Staff, April Lazzaro arrived at the facility at approximately 9:00 AM and met with David Arado, President. Mr. Arado and I discussed the purpose of my visit which was to observe operations during the scheduled stack test, and to conduct an unannounced inspection of the facility.

#### FACILITY DESCRIPTION

Siliconature Corporation is a plastic film coating operation. Opt-out Permit to Install No. 158-16A was issued on May 17, 2019 for two plastic film coating lines controlled by non-fugitive enclosures and regenerative thermal oxidizers (RTO No. 1 and RTO No. 2) and four solvent storage tanks. The emissions generated from the associated purge and cleanup solvent use is included. A Flexible Group (FG) for the facility contains limitations on Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) that restrict emissions below major source limits.

#### COMPLIANCE EVALUATION

During the inspection, I was assisted by Matteo Dal Mas, Plant Manager and Ryan Adams of Siliconature along with Mark Horne of EPI consultants. Present conducting stack testing was Scott Cargill, Rick Eerdmans and David Engelhardt of Network Environmental. During the stack testing AQD Technical Programs Unit staff were also present consisting of Tom Gasloli, Lindsay Wells and Matt Karl observing methodology.

#### FG-Tanks

This FG covers four solvent storage tanks, one resins storage tank and multiple mix tanks. These four tanks for the solvents are housed outside and consist of double walled containment tanks, with submerged fill pipes and conservation vents. The solvents are then piped into the facility mix room where Siliconature staff distribute the solvents to a container for each batch of coating as it is formulated. The mix room area was clean and the coating containers were equipped with fit tight lids. The lids were observed to be in place while the coating is transported to the line for use. Emissions generated in the mix room are vented uncontrolled via floor sweep exhaust ventilation and a dedicated stack.

#### FG-Coating

This FG covers two silicone plastic film coating lines, however only one coating line has been installed at this time. Line #1 consists of a corona treatment unit, a coater, eight drying ovens and eight curing ovens. The coater and drying ovens are controlled by a non-fugitive enclosure (NFE) and RTO #1. Emissions generated from the associated purge and cleanup solvents used on the line are included and controlled by the RTO.

#### EMISSION LIMIT(S)-

Emissions of VOC are limited to 18.6 tons per year for two coating lines combined based on a 12-month rolling time period as determined at the end of the month. The coating line has not been in operation for 12 months and only one of two permitted lines has been installed. VOC emissions for one coating line for the month of September were reported at 12.2 pounds. Total reported VOC emissions for the three months of operation are 118.7 pounds.

The emissions spreadsheet was requested and received, and following a detailed review, AQD staff had a couple questions and a comment about the data that resulted in changes. (see attached email) There

was a suggestion for changing the nomenclature from "received" to "used" and during a discussion with the consultant, Mark Horne this was agreed upon and a new spreadsheet was submitted.

In the permit application the company made assumptions that a small amount of VOC would be emitted from the curing ovens exhaust that is uncontrolled. Following installation, the company contracted a stack testing group to conduct an engineering stack test (ie. not observed or approved by AQD) on this stack to ensure VOC emissions were at or below what was presented in the application. The company found that the VOC emissions were less than estimated, and therefore were able to change that number beginning in September. Since no testing was required, and because emissions are lower than expected, uncontrolled and do not have their own emission limit from the curing ovens, the use of the data obtained from the engineering stack test will be allowed at this time. It is always suggested that AQD be able to observe and review any stack testing so that there is no question to the validity of the data obtained.

Finally, I questioned the amount of solvent (emissions) that is being deducted from the waste stream. Mr. Horne agreed that the company is actively trying to reduce this value. However, they also have begun tracking this waste so that they can prove the legitimacy of the numbers. It is not expressly required to be done, however when it is a large part of the overall emissions equations it is best to be accountable.

These explanations and changes are acceptable and make for easier to understand recordkeeping. Mr. Horne has sent the updated spreadsheet with changes and it is attached.

There are no material limitations in this permit.

#### PROCESS/OPERATIONAL RESTRICTIONS(S)

The observations made during the inspection indicate that Siliconature is capturing waste materials appropriately at this time and are making a concerted effort to reduce the waste currently generated.

The malfunction abatement plan (MAP) had been previously submitted and appears adequate. If during the start up phase changes are made to the MAP, it should be resubmitted within 45 days.

#### DESIGN/EQUIPMENT PARAMETERS

The RTO that controls this line is a three-chamber design. The temperature at the time of the inspection was a self-sustained 1,625°F. By self-sustained I mean that at the time the reading was taken, no natural gas was being used to fire the flame, it was maintaining the temperature by burning the gasses generated by the rotogravure application coating line. There is a visual display screen and the computer is monitoring and recording the RTO temperature every 15 seconds. The permit requires a minimum temperature of 1,500°F and a 99% destruction efficiency. Preliminary stack test results indicate compliance with these requirements.

It is noted that the PTI Special Condition No. IV.1 about the RTO reads as follows:

The permittee shall not operate EU-CoatingLine-01 of FG-Coating unless the RTO is installed, maintained and operated in a satisfactory manner. Satisfactory operation of FG-Coating includes a minimum NFE capture efficiency of 100% (by weight), a minimum destruction efficiency for each RTO of 99% (by weight), maintaining a minimum RTO temperature of 1,500°F or the minimum temperature from the most recent acceptable stack test, and a minimum retention time of RTO 0.5 seconds.

The set point for the oxidizer was at 1,550°F during the inspection to keep the temperature above 1,500° F. Since the temperature of the RTO during the stack test was higher than 1,550°F, a new minimum temperature has been established. The lowest value I recorded during the test was 1,623°F. Siliconature should use the average minimum temperature recorded during testing (3 1-hour runs) to establish the new minimum temperature that is necessary to comply with the 99% destruction efficiency that was determined to be Best Available Control Technology (BACT). Additionally, the company should modify and resubmit the Malfunction Abatement Plan to specifically identify this change in the air-cleaning device operating value, which is required to demonstrate compliance with the BACT limit. Compliance with this temperature limit is determined on an instantaneous basis.

The rotogravure coating applicator and the coating are contained in an enclosed booth that is characterized as a non-fugitive enclosure (NFE) that is required to have a capture efficiency of 100%. As

I walked into the area that housed the coating line, there was no smell of solvent whatsoever. This is an olfactory indication that 100% capture is being achieved. The company also utilizes a magnehelic gauge to measure the pressure drop between the rotogravure application area and the outside. The reading as identified in the MAP is one that is greater than a differential pressure of  $-0.007''$  H<sub>2</sub>O. The value observed during the testing ranged from  $-0.05''$  H<sub>2</sub>O to  $-0.07''$  H<sub>2</sub>O which are both greater than  $-0.007''$  H<sub>2</sub>O and indicate acceptable capture of the solvent vapors. There is a visual display screen and the computer is monitoring and recording the pressure drop every 10 seconds.

#### TESTING/SAMPLING

The AQD has received and approved a request to use manufacturer's formulation data to determine VOC content instead of federal Reference Test Method 24.

The stack testing for EU-CoatingLine-01 was conducted timely.

#### MONITORING/RECORDKEEPING

The spreadsheet obtained has a materials specifications tab that has a row for each individual material used. Each material is identified by its own identifier instead of the trade name to maintain confidentiality. This is acceptable as it lists VOC and HAPs contained in each to demonstrate compliance with the limits.

The recordkeeping being conducted meets the requirements of the PTI and is attached.

#### REPORTING

The company submitted the required notification following installation of EU-CoatingLine-01

#### STACK/VENT RESTRICTIONS

The stacks were not measured, however they appeared to be installed per the permit requirements.

#### FGFACILITY

This flexible group contains conditions that apply source-wide to all process equipment at the facility.

Each individual HAP is limited to less than 8.98 tons per 12-month rolling time period and aggregate HAPs are limited to 22.4 tons per 12-month rolling time period. Emissions up until the first 12 months of operation are cumulative. The highest cumulative individual HAP emission is from toluene use which has emitted cumulative emissions of 47 pounds. The cumulative total HAP emissions through September 2019 are 49.2 pounds.

Total source-wide VOC emissions are limited to 30.0 tons per 12-month rolling time period. Emissions up until the first 12 months of operation are cumulative. Current source-wide VOC emissions are 118.7 pounds.

The recordkeeping being conducted meets the requirements of the PTI and is attached via a data disk.

Information was obtained regarding operations to ensure the process was at maximum routine operating conditions during the stack test.

Run #1 began at 8:53 AM, with a 61'' roll. RTO temperature was at 1,625°F and the NFE pressure drop was  $-0.05''$  H<sub>2</sub>O

Run #2 began at 10:40 AM with a 62'' roll. RTO temperature was at 1,647°F and the NFE pressure drop was  $-0.07''$  H<sub>2</sub>O. There was a 20-minute pause in testing during run #2 so that a roll change could be made.

#### CONCLUSION

Siliconature Corporation was in compliance at the time of the inspection.

NAME Ami Longman

DATE 11-22-19

SUPERVISOR [Signature]