

SRN M4492
Manila Folder

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

M449245416

FACILITY: WOODBRIDGE FOAM CORP		SRN / ID: M4492
LOCATION: 15573 OAKWOOD DR, ROMULUS		DISTRICT: Detroit
CITY: ROMULUS		COUNTY: WAYNE
CONTACT: Dean Siev , Manufacturing Manager		ACTIVITY DATE: 06/13/2018
STAFF: C. Nazaret Sandoval	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Scheduled Inspection for FY 2018		
RESOLVED COMPLAINTS:		

SOURCE: M4492 – Woodbridge Corporation (A.K.A. The Woodbridge Group)

ADDRESS: 15573 Oakwood Drive, Romulus, MI 48174

INSPECTION DATE: 6/13/2018

INSPECTOR: Nazaret Sandoval (AQD-DEQ)

FACILITY CONTACT: Dean Siev – Manufacturing Manager

CONTACT PHONE: Direct Number (734) 857-1360

1.- FACILITY LOCATION AND PROCESS DESCRIPTION

The Woodbridge Group in Romulus (Woodbridge) produces polyurethane foam automobile seat cushions for Tier II suppliers. The facility is located southwest of the Detroit Metropolitan Wayne County Airport, south of Eureka Rd and north of Pennsylvania Road, in a light industrial/commercial area that lies on the west side of Interstate I-275. The CSX railroad line runs north-south along the west side of the facility. Neighboring businesses include a tarp manufacturer, an electrical supply/distributor and a machining service company. Some residential homes are located approximately at a half a mile west of the facility on South Huron River Drive. Barth Elementary School, on Barth Street, is about a mile away northwest.

Woodbridge has been in operation in Romulus since 1989. The facility operates Monday to Friday, 24 hour a day in three 8-hrs shifts for a total of 15 shifts in a week. On occasions, depending on costumers demands, there are weekends operations at a minimum of 8-hr/shift.

The polyurethane foam is produced by mixing polyols, silicone, and amines to form a resin blend. The resin blend proceeds to a pouring station where toluene di-isocyanate (TDI) is added via high pressure impingement mixing. The resin blend/TDI mixture is then poured into molds of the desired shape and the compounds react in the mold in electric radiant heat element ovens to form the polyurethane foam seat. A solvent-based mold released agent (MRA) is applied to the molds via spray applicator. The molds are affixed to an 88 carrier that resembles a racetrack whereby it takes about 10 minutes from the filling of the mold to the removal of the foam pads. A small amount of mold release paste (paste wax) is used to clean the molds. The operations run continuously and there are several work stations along the length of the closed loop foam production line. The backside of the line is dedicated to uninterrupted curing.

2.- PERMIT BACKGROUND

The operations at Woodbridge were originally permitted by the Wayne County Health Department, Air Pollution Control Division (Wayne County) in 1989. Wayne County Permit numbers C-8497 through C-8503 were issued for the manufacturing of polyurethane foam seats at the Woodbridge in Romulus, MI. A letter dated July 13, 1989 included the permit conditions. Over the years, the original Wayne County permits were modified and they were replaced by a permit issued by the Air Quality Division (AQD).

Records in AQD files indicate that due to increased demand as well as minor process improvement alterations, the company requested modifications to the Wayne County permits and new permits were issued in the 90's and in April of 1995. Four years later, in 1999, Woodbridge requested another modification. Part of the modifications included the incorporation of the results from emission testing performed in 1996. On October 8, 1999, a new permit (PTI No.126-99) was issued by AQD. From 1999 to 2016, the AQD permit has been modified twice per company request. PTI 126-99A issued on July 2, 2003 revised the special conditions for the TDI storage tanks.

As of the date of this inspection report the active permit is identified as PTI 126-99B, issued on April 6, 2016. The main modification to the previous permit was the incorporation of a Regenerative Thermal Oxidizer (RTO) as the pollution control equipment to control volatile organic compounds (VOC) emissions from exhaust of the existing polyurethane foam molding line and the installation of an emergency RTO- bypass line. With the installation of the RTO the emission limits and other special requirements were also modified.

This facility is classified as a synthetic minor source because the company opted out from the requirements of Rule 210 to obtain and operate in compliance with the Renewable Operating Permit (ROP) by accepting enforceable operational limits that restrict the annual Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs) emissions to below the major source threshold levels. The source operates under the "Opt-out" permit PTI No. 126-99B that limits the facility wide VOCs emission to 96 tons/year, the aggregate HAPs emissions to less than 25 tons/year, and individual HAPs to less than 9 ton/year. Besides the cited 12-month rolling emission limits for the facility, the permit includes short-term VOCs emission limits in pound per hour (lbs/hr) from the RTO stack at the Polyurethane Foam Molding (EU-PolyFoamMoldingLn), as well 12-month rolling VOC emission limits in tons per year from MRA and paste wax usage. The facility may choose to bypass the RTO when operating the EU-PolyFoamMoldingLn, in which case the MRA usage is drastically reduced. There are separate material limits for MRA usage (with and without RTO operation).

In this facility, the MRA is the primary source of VOC emissions. TDI and Di-ethanolamine (DEOA) are federally defined hazardous air pollutants (HAPs).

3.- COMPLIANCE HISTORY

Since the last inspection, which was conducted on September 4, 2013, our records show that there is no history of complaints for this facility.

A Consent Order (herein "the order") identified as AQD No. 31-2013 with effective date of January 23, 2014 was signed between the DEQ/AQD and Woodbridge Corporation. The order was a result of an enforcement process initiated by the DEQ / AQD to resolve violations of the Permit to Install No. 126-99A. The violations are described in the Violation Notice (VN) dated July 22, 2013 issued by AQD after the facility self-disclosed permit emission limits violations on May 29, 2013. Specifically, the company reported exceeding the facility-wide annual emission rate limit for VOC, the VOC emission rate for the polyurethane foam line, and

the material usage limits for the mold release agent.

According to the general provisions cited in paragraph eighteen (18) of the order, the order shall remain in full force and effect for a period of at least three (3) years since the effective date of the order and could only be terminated upon written notice of termination requested by the company to the AQD Chief.

Our records in file show that Woodbridge has fully complied with all the requirements of the order and the 3-year minimum period for implementation/enforcement ended on January 23, 2017. However, at the time of the completion of this report the facility has not requested termination of the order; therefore, the order remains in effect.

According to the order, Woodbridge shall comply with all the requirements and limitations set forth in PTI 126-99A and any subsequent revisions. Therefore, at this point in time, the applicable requirements are those set by the current permit PTI 126 -99B.

4.- INSPECTION NARRATIVE

AQD inspector, Nazaret Sandoval arrived at Woodbridge at approximately 9:30 AM and met with Mr. Dean Siev, Manufacturing Manager at the Romulus facility. Mr. Sam Sangodele joined our meeting. Mr. Sangodele is a Chemical Engineer who will be helping Mr. Siev with the AQD permit compliance issues.

The meeting was initiated by stating the purpose and authority for the inspection. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451 and the conditions of the permit to install PTI 126-99B.

The first portion of the inspection included a comprehensive evaluation of the special conditions cited in PTI 126-99B for EU-PolyFoamMoldingLn. The evaluation included the review (on the computer screen) of the "excel" sheet used by the facility to compute the VOC emissions. Mr. Dean Siev explained the calculations. We continued with a discussion of the emission and material limits, the process/operational restrictions, RTO exhaust stack testing and the request/collection of supporting monitoring and facility records. The special conditions cited in the permit for all the other emissions units (EUs) covered by the PTI were also discussed during our meeting.

At the end of our meeting we proceeded with the tour of the facility. The process consists of the following work stations: a pouring area, curing ovens, de-mold station and foam removal, mold conditioning/cleaning, mold release agent spray booth and mold inserts area.

The polyurethane foam production cycle can be described as follows:

- 1) A mold release agent (MRA), which contains a high percentage of VOCs, is applied to the mold and lid portion of the mold in a small spray booth enclosure before mold inserts are added. The MRA application at the spray booth is regulated by using electrostatic guns. The spray booth is controlled by the RTO and the associated stack is SV-RTO (controlled) or SV-S2 (bypass).

- 2) Following application of MRA inserts such as wire frames, support ribs, tear suppressing, etc., are placed either on the mold lid or bowl as per customer specifications. This area is equipped with a stack (SV-S3). The mold stays open until it proceeds to the pouring station.

3) In the surge area and pour station a resin blend/TDI mixture is poured into the bowl portion of an open mold. The mold is closed as the chemical reaction begins and cycles past the pour station allowing the next mold in the process to be filled with the mixture. This is done in an enclosed ventilated area equipped with a stack SV-S4.

4) Heat is introduced via a series of radiant heating elements on the back of the mold line. In the curing ovens the mixture becomes polyurethane foam. The associated stack is SV-S1.

5) The mold opens at the de-mold station and the foam is manually removed, placed on a conveyor and sent to the crushing and trimming stations where the foam is flattened with a roller and trimmed for a finished product. The finished products are inspected and those that need to be repaired are sent to the repair station. A water bond adhesive is used to repair foam defects and for topper application.

6)) After the foam has been removed, the mold must be prepared for the next cycle before returning to the pouring station, so prior to adding the raw materials to the mold, the mold bowl and lid are hand cleaned using a rag or brush with a paste wax to facilitate removal of debris or scrap foam from the mold. The associated stack is SV-S1.

NOTE: The crushing and trimming stations are “off-line” the foam production racetrack. Crushing refers to squeezing the foam during cooling which breaks open the cells that release carbon dioxide and ensure dimensional stability.

Other areas of operations at the facility include: the bulk chemical storage and receiving area, the drum storage area, the chemical mixing area, and the tooling area (where mold maintenance repairs occur). Di-ethanolamine (DEOA), silicone, amine catalyst, and MRA are stored in totes and drums, whereas Polyol and TDI are received by tank trucks and stored in tanks in the tank farm area located at the west corner of the building. Tanks 1 through 4 are 12,000-gallon polyol storage tanks and Tanks 5 and 6 are 10,000-gallons TDI storage tanks. There are also two empty tanks in that storage area.

Displaced air from the TDI tanks vent through activated carbon adsorption canisters. The associated stack is identified as SV-S7. The canisters are on scales to monitor the weight before they reach saturation at 345 pounds per bed (according to permit limits). Daily records of the weights are maintained by the operator. During the inspection the weight of the carbon bed for Tank 5 was 230.6 lbs. and 216.4 lbs. for Tank 6, both values below the permit limits.

According to Mr. Dean Siev the manufacturing process for the production of polyurethane foam seat cushions has essentially remain the same since the last inspection with the exception of two machines identified as “coring machines” located off-line the foam production racetrack which are used to punch holes to the finished cushions. The main modification to the facility has been the installation of the RTO as the pollution control equipment to control VOC emissions from exhaust of the existing polyurethane foam molding line; specifically, from the spray booth area where the MRA is applied. There is also an RTO- bypass line for uncontrolled emissions.

Mr. Patrick Ariganello, Maintenance Operator, joined us to describe the RTO operations and the associated maintenance activities.

An exhaust gas collecting pipe associated with stack SV-RTO runs across a level closer to the ceiling of the building and comes out of the southwest side of the building to be connected to the RTO pollution control system outside of the building. A filtering system prior to the RTO controls particulate matter. Very fine particles (mostly paraffin wax dust) are trapped by a dust collector equipped with a filter bag system (10-row of filter bags) which cycles and cleans automatically when it gets to a set pressure drop of 3.3 inches of water. The pressure drop is maintained between 1.9 and 3.3 inches of water. At the time we stopped at the control panel (around 2:45 PM) the pressure drop was 2.7 inches of water. From the filter, the gas is drawn out to the combustion chambers into the RTO and exhaust thru the 36- inch diameter and 40- ft high stack.

Mr. Ariganello explained that daily, weekly, monthly, and quarterly activities are performed as a regular preventive maintenance in accordance with the checklists developed by Woodbridge per manufacturers recommendations and which are part of the approved Malfunctioning Abatement Plan (MAP). For example, every month the exhaust points in the transfer pipe are checked to verify there is no dust buildup before the gas gets to the filter.

During the tour we observed the areas of the plant inside/outside the building with emphasis in the activities related to the production line and the emissions controls (filters, RTO equipment and control panel). The control panel showed a setpoint of 1450°F for the RTO operation and the actual temperature recorded at 2:45 PM was 1576 °F.

In the maintenance area there are four tooling bays. Particulate emissions from the mold grinding area are controlled by dust filters. Bay 2 has filters for mold grinding which appeared to be installed properly.

In addition to the foam cushions, the Romulus plant used to manufacture a minor number of finished seats for the Viber. However, that project ended about two years ago and the facility is no longer fabricating seats.

At the end of the tour there was an additional issue that came out in our discussion. The facility has rooftop space heaters fueled by natural gas. I indicated that those units must be accounted for the total facility emissions. Woodbridge must provide a description of the units, number of space heaters, fuel usage and maximum rated capacity in Btu per hour to verify if the equipment qualify for a permit exemption under Rule 282. Woodbridge indicated they would follow-up on this standing issue.

We met again for the closure conference and I concluded the visit indicating that the facility seems to be in compliance with the permit conditions evaluated during the inspection; however, the final compliance determination would be provided in the inspection report after the facility records are examined in detail and any standing issues are resolved. I left the facility at approximately 5:00 PM

5.- PTI 126-99B - PERMIT CONDITIONS

Compliance determination with the permit requirements and special conditions (SC) is based on the review of the facility records for the period 5/1/2017 to 5/31/2018, site inspection observations, and reports submitted to AQD during the most recent year. Monitoring and emission calculations records for the cited period were handed out during the inspection of June 13, 2018.

The following are the SC applicable to each emission unit identified in the permit. Some

conditions are paraphrased for brevity.

EU-PolyFoamMoldingLn - Polyurethane foam molding line

Pollution Control Equipment – RTO at the spray booth for VOC emission control. Filtering system prior to RTO for particulate matter control

SC I. - In Compliance

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Record & Reference	Compliance Yes /No
1. VOC	3.75 lbs/hr from RTO Stack	RTO Stack Test*	Spray Wax Booth portion of EU-PolyFoamMoldingLn When operating the RTO	0.57 lbs/hr SC V.1	Yes
2. VOC	42.0 tpy from MRA Usage	12-month rolling time period as determined at the end of each calendar month	EU-PolyFoamMoldingLn (including both stack and uncaptured fugitive emissions)	Highest value: 4.212 tpy SC VI.3	Yes
3. VOC	4.4 tpy from Paste Wax Usage	12-month rolling time period as determined at the end of each calendar month	EU-PolyFoamMoldingLn	Highest value: 0.104 tpy SC VI.3	Yes
* Most recent RTO stack test conducted on January 18, 2017					

SC II. - In Compliance

Material	Limit	Time Period / Operating Scenario	Equipment	Record & Reference	Compliance Yes / No
1. MRA	5,800 gallon per year	12-month rolling time period as determined at the end of each calendar month	EU-PolyFoamMoldingLn (while the RTO is not operating)	Highest value: 10 gal/yr. SC VI.3	Yes Short periods of RTO bypass occurred in March and April 2017
2. MRA	49,200 gallon per year	12-month rolling time period as determined at the end of each calendar month	EU-PolyFoamMoldingLn (while the RTO is operating)	Highest value: 37,613 gal/yr. SC VI.3	Yes
3. VOC content of MRA	6.25 lb/gal (minus water) as applied	Instantaneous	EU-PolyFoamMoldingLn	VOC content reported in SDS SC VI.2, SC VI.3	Yes
4. VOC content of paste wax	4.45 lb/gal (minus water) as applied	Instantaneous	EU-PolyFoamMoldingLn	VOC content in SDS SC VI.2,VI.3	Yes

SC III.1 – In Compliance

Shall capture all waste polyol blend, TDI, MRA, cleanup solvents, etc. (materials) and shall store them in closed containers/storage tanks. The permittee shall dispose of all waste materials in an acceptable manner in compliance with all applicable state rules and federal regulations.

The facility has a dedicated area identified as the “Drum Storage Area” located on the west side of the building. In that area they store and properly label the hazardous and non-hazardous waste, the universal waste, empty drums, etc. They have separate storage for toxic and non-toxic materials. The Drum Storage Area was inspected, and all containers were properly identified and were sealed. An external environmental company is contracted to haul and/or dispose the waste materials.

SC III. 2 – In Compliance

Shall dispose of spent filters in a manner which minimizes the introduction of air contaminants to the outer air.

Spent filters are collected and disposed in the Drum Storage Area.

SC III.3 – In Compliance

Shall handle all VOC and HAP containing materials, in a manner to minimize the generation of fugitive emissions. Shall keep containers covered at all times except when operator access is necessary.

All containers in the bulk chemical storage and receiving area, in the drum storage area, and in the chemical mixing area are maintained closed. TDI and Polyol storage are in closed containers in a separate locked room.

SC III.4 – In Compliance

Shall submit a malfunction abatement plan (MAP) as described in Rule 911(2) within 60 days after commencement of trial operation of an RTO, and the MAP shall be implemented and maintained.

After the trial operation of the RTO, which was conducted from May 16, 2016 to July 29, 2016 the facility submitted a MAP report dated September 18, 2016. The MAP, reviewed and approved by AQD, contains all the required information specified under SCs III. 4 (a) to (c) as follows:

a) A complete preventative maintenance program (PMP) including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.

Tom Hersch, the Maintenance Supervisor, continues to be the responsible person for the RTO preventive maintenance program at Woodbridge. The MAP includes an inspection list with the items to be inspected or serviced on the RTO and the frequency of inspections, per manufacturer’s recommendations. The operators at Woodbridge conduct daily, weekly, monthly, and quarterly inspections that are based on the MAP.

The specific activities to be checked are listed and recorded on inspection checklists developed by Woodbridge. AQD collected copies of a daily/weekly inspection initiated on 6/11/2018 and the templates forms used by the operators for the other inspection frequencies. Woodbridge doesn’t maintain paper copies of the inspections, once the operator completes an inspection, the forms are handed out to Mr. Hersch who enters the information into the Woodbridge PMP system in a weekly basis. The paper copies

are discarded afterwards. Mr. Hersch showed me on the computer screen some of the most recent records entered in the system.

The inventory listing the spare parts - standard and critical parts – is maintained as required. There have not been changes or revisions to the list.

b) An identification of the source and operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.

The RTO combustion chamber temperature is identified as the operating variable continuously monitored and recorded in a circular chart for a seven-day period (Monday to Friday). The RTO temperature is set to be maintained within 1450 to 2000 °F. Example charts were collected by AQD on the day of the inspection

c) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If the RTO temperature approaches either the lower or the higher value of the operating range, an alarm will go off to notify the maintenance personnel to investigate the issue and determine if the RTO needs to be shut down.

For additional MAP details, refer to the approved report which in AQD files.

If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor.

There have been no changes or revisions to the approved MAP since the original submittal. During the inspection tour Mr. Ariganello indicated that he monitors and records the dust collector differential pressure in his daily routine to assure that it is within the manufacturer recommended operating range. The values are maintained above 1.9 and below 3.3 inches of water. AQD recommends revising the MAP to add the dust collector differential pressure to the MAP list of operating variables that are key components for a proper functioning of the RTO. The MAP only lists the RTO temperature.

SC IV.1 - In Compliance

Shall not operate EU-PolyFoamMoldingLn unless a filtering system prior to RTO is installed, maintained and operated in a satisfactory manner.

There is a filtering system prior to the RTO that controls particulate matter. The fine particles are trapped by a dust collector equipped with a filter bag system which cycles and cleans automatically when it gets to a set pressure drop (ΔP) of 3.3 inches of water. The filtering system is maintained according to the manufacturer recommendations by conducting the daily, weekly, monthly and quarterly preventive maintenance activities specified in the checklist developed by Woodbridge, which are part of the MAP.

AQD collected copies of a daily and a weekly inspection conducted in 2018. The operator records the differential pressure at the dust filter in a daily basis and inspects the 55-gallon drum that collects dust from the baghouse. If the drum is over the 50% level, the drum shall be emptied (this generally occurs once a week). Monthly inspection includes checking the overhead duct for wax buildup.

At about 2:45 PM on the day of the AQD inspection the control panel showed a ΔP of 2.7 inches of water

SC IV.2 - In Compliance

Shall equip and maintain each spray booth portion of EU-PolyFoamMoldingLn with HVLP applicators or comparable technology with equivalent transfer efficiency.

The facility uses electrostatic spray guns which are more efficient than HVLP. The guns are periodically calibrated.

SC IV.3, SC I.1, and SC V.1 - In Compliance

Shall install, maintain and operate the RTO in a satisfactory manner except when the RTO is bypassed. Satisfactory operation of the RTO includes a minimum VOC destruction efficiency of 95 percent (by weight) or a maximum VOC emission rate of 3.75 pounds per hour (SC I.1), maintaining a minimum temperature of 1,450°F, a minimum retention time of 0.5 seconds, and the capture efficiency of 90 percent for the spray booth.

The RTO has been properly maintained and operated since its installation in 2016. The RTO stack test was conducted on 1/18/2017 in accordance with the AQD approved test plant dated 12/26/2016. A report dated 2/16/2017 with the results of testing was prepared by the testing company and it was timely submitted to AQD. The results of the test demonstrated compliance with the permit conditions and testing requirements detailed in sections IV.3 and V.1. of permit PTI 126-99B, for EU-PolyFoamMoldingLn.

The following table summarizes the average results from the 3 runs of testing:

SYSTEM CAPTURE EFFICIENCY	
Total VOC Input During Test Run (lbs)	73.19
Total VOC Capture During TEST Run (lbs)	71.74
VOC Capture Efficiency (% by weight)	98.0 %
RTO DESTRUCTION EFFICIENCY	
VOC Input Rate to RTO (lbs/hr)	35.8
VOC Output Rate from RTO (lbs / hr)	0.57
VOC Destruction Efficiency (% by weight)	98.4%

AQD witnessed the test. For details of AQD observations during the test please refer to MACES activity report CA_M449238364 on file.

SC IV.4 and VI.4 - In Compliance

Shall install, calibrate, maintain and operate in a satisfactory manner a temperature monitoring device in the combustion chamber of the RTO to monitor and record the temperature on a continuous basis in a manner and with instrumentation acceptable to the AQD. Continuous temperature data recording shall consist of measurements made at equally spaced intervals, not to exceed 15 minutes per interval. All records shall be kept on file and make them available to the AQD upon request.

The thermocouples sensing the RTO temperature are routinely calibrated and listed as standards spare parts in the MAP. The exhaust gas temperature from the RTO combustion chamber is automatically monitored and recorded in circular charts programmed for a seven-day chart display (Monday to Friday). The normal operating range is set as 1450 to 2000 °F. Weekly temperature charts are maintained at the facility. Samples of the RTO temperature charts were collected on the day of the inspection. All temperature records showed values above 1500 °F. Mr. Siev indicated that in a near future they will be replacing the paper chart with electronic recording.

SC VI.1, SC VII.2 – In Compliance

Shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition.

Woodbridge performs all required calculations for each calendar month. The calculations are performed within 30 days following the end of the calendar month in which the records are collected. The emission rate calculation procedure was submitted for approval to AQD on September 8, 2016. Woodbridge had to modify their former method to be in line with the current permit requirements set after the RTO operations started. The calculation format was approved by AQD and it has been used to perform VOC emission rate calculations from EU-PolyFoamMoldingLn, as well as to keep records of material usage as required by the new PTI. During the inspection on 6/13/2018 AQD examined the electronic spread sheet in their computer screen. It appears as if they are timely completing the calculations in compliance with AQD approved format.

Please note that the language cited on SC VII. 2 needs to be revised because it incorrectly requires Woodbridge to submit monthly VOC emission rate calculations to AQD. The intent of the condition is to require the completion of the calculations in a monthly basis.

SC VI.2 – In Compliance

Woodbridge maintains a current listing from the manufacturer of the chemical composition of each material, including each polyol blend, mold release agent (MRA), and cleanup solvents, used in EU-PolyFoamMoldingLn, including the weight percent of each component. The data consists of Safety Data Sheets (SDS) which are kept at the facility. AQD requested copies of SDSs and Woodbridge provided them on the day of the inspection. They are filed with the report in AQD facility files.

SC VI.3 – In Compliance

Woodbridge uses the AQD approved method and format to perform the material usage and emissions calculations. The records were examined in Woodbridge's computer screen and they were available to AQD upon request. During the inspection, AQD collected records for the period from 5/1/2017 to 5/31/2018.

The following information is gathered for EU-PolyFoamMoldingLn in a monthly basis and it is saved by Woodbridge in an electronic format:

a) Gallons and/or pounds (with water) of each material, including: spray wax, paste wax, TDI, DEOA and MRA used in EU-PolyFoamMoldingLn.

Refer to the records attached to the inspection report in AQD files.

b) Start and end date and time the RTO is by-passed and total hours of operation of the RTO.

During the evaluated period, from May 2017 to May 2018, the RTO operated continuously from Monday to Friday. Records show a maximum of 500 hours of operation per month. No RTO bypass reported for this period. For details about the total annual hours of operation refer to records in AQD files.

c) Gallons and/or pounds of MRA used with and without RTO

The highest monthly MRA usage when the RTO was operating was 9.77 gal/hr. reported for October 2017.

d) The usage rate of MRA with and without RTO on 12-month rolling time period as determined at the end of each calendar month.

The highest MRA usage rate with the RTO operating was 37,613 gallons per year, reported for the end of May 2018. The usage rate is below the permit limit of 49,200 gal/yr.

e) VOC content of each material as applied.

The VOC content in the MRA solvent (PU 11332) ranges from 90 -100 % and from 60-70 % in the paste wax (CT-1007) – both are weight basis percentages-. The values are reported on the SDS for each compound, as well as the bulk densities. For the material usage calculations Woodbridge uses 96% VOC for the MRA and the reported SDS bulk density of 6.50 lb/gallon. The paste wax has a bulk density of 6.84 lb/gallon and a 64% VOC content is used in the calculations.

f) VOC mass emission calculations determining the monthly emission rate in tons per calendar month.

VOC mass calculations are performed using the compound properties cited in item (e) above. For details of monthly records refer to the records attached to the inspection report in AQD files.

g) VOC mass emission calculations determining the annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month.

The highest annual VOC mass emission rate in tons per 12-month rolling from the MRA solvent (4.212) and from the paste wax (0.104) were reported by Woodbridge at the end of May 2018 and at the end of September 2017 respectively.

SC VII.1 – In Compliance

The RTO system was completed and installed in late April of 2016. Woodbridge notified AQD via phone and a written notification was submitted later. The formal letter, received on September 8, 2016, also included a notification about the trial operations of the RTO which was conducted from May 16 to July 29, 2016.

EU-TDITanks – Bulk toluene diisocyanate (TDI) Storage Tanks

Pollution control equipment – Activated carbon adsorption canisters

SC I.1, SC II.1, VI.1 and VI.3 – In Compliance

EU-FoamCrushing (SC I.1 and SC VI. I) - In Compliance

The permit limits TDI emissions to 0.005 pounds per hour (pph) from EU-TDITanks, and to 0.001 pph from EU-FoamCrushing. The filling rate for the TDI tanks is 50 gallons per minute. All required calculations shall be completed by the last day of the calendar month, for the previous calendar month. Records of calculations shall be kept on file for a five-year period and make them available for AQD review.

The calculations were performed as required by this condition. The records are kept on file and were available for review. For the evaluated period the TDI emissions were very low (0.0001 lbs./hr). The records provided by Woodbridge in the summary tables included the TDI emissions in pph for the process as a whole. In other words, the reported TDI emissions included all sections of the process where TDI emissions may be created which are the demold, crusher, pour, surge and bulk storage areas. The emissions are calculated based on the total amount of TDI used at the plant and the

emission factors determined in the past based on stack testing data conducted at Woodbridge Romulus. The facility used those emission factor as it encompasses all of the areas where TDI emissions can be created.

The records indicate the TDI tanks filling rate ranged between 0.64 to 0.87 gallons per minute.

SC III.1, VI.2 - In Compliance

Shall measure and record the weight of activated carbon adsorption canisters upon installation and on a daily basis according to SC III.1 and VI.2. When the weight of a canister reaches 345 pounds, it shall be replaced within 24 hours and the scales recalibrated to ensure accurate measurement.

The carbon canisters are checked daily by the operators as part of the preventive maintenance. The log, which includes all the necessary information required by the permit, is managed by the maintenance department and is kept in the MP2 system where it is stored electronically.

At the time of the inspection of the TDI area AQD recorded the weights of the canisters. The scale showed a weight of 230.6 pounds for the canister serving TK #5 and 216.4 pounds for the canister serving TK #6. According to Woodbridge the scales are recalibrated when the carbon adsorption canisters are replaced.

SC IV.1 – Substantial Compliance

Shall not operate the TDI storage tanks unless activated carbon adsorption canisters are installed and operated properly. This includes maintaining a minimum removal efficiency of 95% and replacing the canisters in accordance with SC III.1

Removal efficiency is unknown as testing has not been performed; however, facility is in compliance with SC III.1

EU-QCPhysicalsRoom – Mold Grinding Area

Dust Control filters and fume hood connected to stack SV-S9

SC III.1 and SC IV.1 – Unknown

Shall not operate mold grinding area unless filters are installed and operating properly. Filters shall be disposed to minimize contamination of outer air.

Filters appeared to be installed properly during the inspection although the booth was not in use. No information was gathered about filter disposal.

FG- Facility

SC I.1, I.2 and I.3 - In Compliance

Individual HAPs are significantly less than 9 tons per year(tpy) based on a 12-month rolling time period determined at the end of each calendar month. For the evaluated period the highest individual HAP's was 0.0171 tons/year reported for DEOA at the end of May, June and November 2017.

Aggregate HAP's were also less than 25 tpy, and at very low values, reaching 0.0174 tpy at the end of the cited months.

VOC emissions were less than 96 tons per year based on a 12-month rolling time period. The actual value for VOC emissions was reported earlier in this report under the foam production line, which is the only source of VOC from the facility. Currently, the other potential source of VOCs at the facility are the natural gas fired roof-top heater, which will emit a negligible quantity of VOCs and have not been quantified. The

space heaters are not included in PTI 126-99B because they are exempt from permitting under exemption Rule 282. (for details refer to exempt equipment)

SC V.I – In Compliance

The facility determines the HAP content of the material as received and as applied, using manufacturer’s formulation data contained in the SDSs. The SDS for the DEOA and TDI were collected during the inspection.

SC VI.1 and VI.2 – In Compliance

The facility keeps records of mass emission calculations for the individual HAPs, and aggregate HAPs in tons per 12-month time period as determined at the end of each calendar month as required by permits conditions cited under SC VI.2a to 2e. Records were collected during the inspection and are kept with the inspection report.

All Stack/Vent Restrictions

SC VIII – In Compliance

The exhaust gases from the stacks associated with the emission units listed below shall be discharged unobstructed vertically upwards to the ambient air.

Stack & Vents ID	Emission Unit Associated
SV-S1 (Demold Station, Cure Oven)	EU-PolyFoamMoldingLn
SV-RTO (Spray Wax Booth - Controlled)	EU-PolyFoamMoldingLn
SV-S2 (Spray Wax Booth – Unc.(by-pass)	EU-PolyFoamMoldingLn
SV-S3 (Insert Area)	EU-PolyFoamMoldingLn
SV-S4 (Surge Area & Pour Station)	EU-PolyFoamMoldingLn
SV-S5 (Foam Crushing)	EU-FoamCrushing
SV-S6 (Offline)	EU-Offline
SV-S7 (TDI Tank)	EU-TDITanks
SV-S9 (Fume Hood Booth)	EU-QCPhysicalsRoom
SV-S10 (Chemical Premix) - Mixing Polyol	EU-ChemicalPre-Mix

Although we did not access the roof during the plant tour; previous observations of the stacks and the roof layout during the RTO stack test in 2016 confirm that the stacks are all discharging upwards with no obstructions.

Except for SV-RTO and SV-S2, which were built and/or modified during the installation of the RTO in 2016, Woodbridge indicated that the dimensions cited in the permit for the other listed stacks have not been modified since their original installation.

The RTO, which is located at the back of the building on the south side, was in operation at the time of the visit. Observations were conducted from the east-side of the building at a close distance of the RTO area. No visible emissions were detected from the tip of the RTO stack (SV-RTO).

Observations were also conducted from the parking lot, north of the building. No emissions were perceived from any of the others stacks associated with the manufacturing of the foam.

6.- PERMIT EXEMPT EQUIPMENT

The facility has a series of natural gas fired roof-top units serving different areas of the building. AQD requested information about the units (i.e. unit type, location and the rated heat input capacities in Btu/hr). Woodbridge provided the information via email on 6/19/2018. The list has been attached to the inspection report.

According to the information, there are four (4) air make-up units in the production area and two (2) in the warehouse. There are four (4) HVAC units, two of them serving office space and the other two in the quality labs. The rest of the units (11 total) are ceiling heaters. The units with the highest heating capacity are the air make-up units in the production area with heating capacities of 4.131 MMBtu/hr. each.

Therefore, under Rule 282(2)(b)(i) all the cited units are exempt from permitting because they are natural gas fired equipment with rated heat input capacities below 50 MMBtu/hr.

When all heat capacities are added, the total reaches 19.81 MM Btu/ hr which is still below the limit of 50 MMBtu/hr cited in Rule 282 for individual units.

7.- NSPS/NESHAP REGULATIONS

It seems like there aren't any NSPS regulation applicable to the operations of this source.

The facility is an opt out source for HAPs that could potentially be subject to area source MACT Subpart 000000 (60) —National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production and Fabrication Area Sources. The applicability of the regulation is explained under 40 CFR 63.11414. Although AQD has not accepted delegation to implement and enforce this regulation, it is important for Woodbridge to examine its applicability to their existing operations. With that in mind, in 2014, AQD sent an email to the former Plant Manager of the facility, Mr. Dave Ralston, which included copies of the Federal Register that discussed the cited regulation. These regulations were re-transmitted on 12/7/2016 to the current Manufacturing Manager (Mr. Dean Siev).

EPA requirements under MACT Subpart 60 are oriented to reduce emissions of methylene chloride from flexible polyurethane foam production due to the health risks associated with the breathing of this compound when it is released to air. This chemical could be present in various process operations of foam production, such as: the equipment cleaners, mold release agents, or in adhesive compounds.

According to an email from the Manufacturing Manager at Woodbridge (Mr. Dean Siev) received by AQD on 12/8/2016, Woodbridge Corporate Policy prohibits the use of Methylene Chloride at all their facilities.

This regulation also applies to area source of HAPs which are manufacturing "finished seats". It is our understanding that Woodbridge (at Romulus) only produces flexible polyurethane foam seat cushions but not finished seats. The manufacture of seats for the Viber ended about two years ago.

Based on the brief evaluation presented above, it appears as if Woodbridge is not subject to the requirements of MACT Subpart 60; however, EPA has delegated authority.

8.- MAERS REPORT REVIEW

MAERS report for emission year 2017 was submitted by the facility on 3/9/2018. The report was audited by AQD. AQD found minor errors in the calculated emissions and requested a review of the report. The facility revised the report by incorporating the actual VOC content in the MRA and in the paste wax for the calculations of total VOC emission. They also added the portion of the emissions that are not captured (2%) by the RTO to total VOC emissions reported facility-wide. The report was re-submitted, and it was approved by AQD on 6/19/2018.

9.- FINAL COMPLIANCE DETERMINATION

As a result of the inspection and further evaluation of the facility records, Woodbridge Corporation appears to be in compliance with the requirements and special conditions of PTI 126-99B and the evaluated state and federal air emissions standards, rules and regulations.

NAME *Handral*

DATE *9/5/2018*

SUPERVISOR *JK*