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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-2501B
Plant ID No.:	077-00015
Applicant:	Superior Reedsville Filtration LLC
Facility Name:	Reedsville Plant
Location:	Reedsville
NAICS Code:	327993
Application Type:	Modification
Received Date:	November 6, 2015
Engineer Assigned:	Edward S. Andrews, P.E.
Fee Amount:	$1,000.00
Date Received:	November 18, 2015
Completeness Date:	May 4, 2016
Due Date:	August 2, 2016
Newspaper:	Dominion Post
Applicant Ad Date:	November 21, 2015
UTMs:	Easting: 603.30 km Northing: 4,374.35 km Zone: 17
Description:	This action is for the installation of 16 additional glass melt furnaces-glass fiber extruding apparatus and binder applicators-glass fiber forming drums with a curing oven.

DESCRIPTION OF PROCESS

The Superior Fibers – Reedsville Manufacturing Facility melts glass cullet raw material, extrudes glass fibers, applies binder to the glass fibers, and then rolls the glass fibers with binder onto large drum rolls. These rolls are placed in in-process storage at the facility, to wait further processing at a later date, which consists of expanding, curing, trimming, packaging, and shipping to customers.

This facility currently has twenty-eight (28) Glass Melt Furnaces – Glass Fiber Extruding Apparatus (Emission Unit ID# GMF-1 – GMF-28) and Binder Applicator-Glass Fiber Forming

Drums (Emission Unit ID# Drum-1 – Drum-28) equipment trains. These equipment items vent inside the production building, and thus do not have any vent/emission point ID# designations. Sixteen more Glass Melt Furnaces-Glass Fiber Extruding Apparatus (Emission Unit ID# GMF-29 – GMF-50) and Binder Applicator-Glass Fiber Forming Drums (Emission Unit ID# Drum-29 – Drum-50) equipment trains are requested in this R13-2501A modification application for planned installation and operation in early first quarter 2016.

The binder applied to the glass fiber consists of varying combinations of water, resin, latex, dye, and/or other additives. The following existing storage tanks and mixing tanks/vessels are used in the process:

- ID# T-1 (vents via breathing vent ID# TV-1 inside building), used to store forming oil which assists in releases of plastic from the rolled glass fiber mats.
- ID# T-2 (vents via header to stack ID# TV-2 to atmosphere), used to store resin.
- ID# T-3 (vents via header to stack ID# TV-2 to atmosphere), used to store resin.
- ID# T-4 (vents via header to stack ID# TV-2 to atmosphere), used to store resin.
- ID# T-6 (vents via breathing vent ID# TV-6 inside building), used to store adhesive oil, such as Hydrocal 900.
- ID# T-7 (vents via breathing vent ID# TV-7 inside building), used to store adhesive oil, such as Reofos 1886.
- ID# T-8 (vents via breathing vent ID# TV-8 inside building), used to store
- ID# T-9 through ID# T-14 are open top mix vessels that vent inside the production building (no vent ID#), used as mixing vessels to mix resin, water, and additives such as dyes and latexes, to blend the desired binder material.

The prepared binder is applied to the glass fiber just after it is extruded from the Glass Melt Furnaces, and just before rolling onto the Glass Fiber Forming Drums, which forms the intermediate glass fiber mat. This unexpanded mat is placed into in-process storage to wait for further processing.

The unexpanded glass fiber mats are unrolled on the Mat Let-Off Table (ID# Hood-1, vents via ID# EP-4 to atmosphere), and travels via conveyor to the Pulling & Expanding Station (ID# Hood-2, vents via ID# EP-5 to atmosphere) where the mats are manually pulled/expanded prior to curing. The expanded glass fiber mats are then conveyed through the Curing Oven (ID# Oven-1, vents to regenerative thermal oxidizer ID# CD-1 to ID# EP-1 vent to atmosphere). The mat is cured at approximately 300° F in the curing oven in order to set the binder, which contains thermosetting resin.

After the cured glass fiber mats exit the Curing Oven, the mats are trimmed to the proper width, cut to the desired length, rolled, weighed, and packaged. Some of the cured glass fiber mats are sprayed, prior to trimming and cutting, at the Adhesive Oil Spraying Station (ID# Spray-1, vent ID# EP-2 vent to atmosphere) to add desired filtration properties to certain products.

With the expansion project, an additional Mat Let-Off Table (ID# Hood-3, vents via ID# EP-8 to atmosphere), Pulling & Expanding Station (ID# Hood-4, vents via ID# EP-9 to atmosphere) Curing Oven (ID# Oven-2, vents to new regenerative thermal oxidizer ID# CD-3 to ID# EP-6 vent to atmosphere) and Adhesive Oil Spraying Station (ID# Spray-2, vents via filter (CD-4) to ID# EP-7 vent to atmosphere) will be added to the facility.

SITE INSPECTION

Mr. Brian Tephabock, compliance supervisor, from the North Central Regional Office (NCRO) last inspected the facility on June 10, 2014. Mr. Tephabock found the facility to be operating in compliance with all applicable regulations and permit conditions. A compliance status code 30 (facility found in be in compliance) was issued because of this inspection. No site visit of this facility is necessary for this modification.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

In this application, Superior provided emission estimates for the existing emission units and well as the proposed additional 16 glass melting furnaces and glass fiber forming drums. The reason that the applicant is revisiting the estimates for existing emission units is that the facility would have a potential to emit of oxides of nitrogen greater than 100 tpy as result of this proposed expansion. Thus, the facility would be subject to the Title V Operating Permit Program of the Clean Air Act.

Superior reviewed the emission calculations from the past permit application and discovered that the emissions estimates for the existing glass melting furnaces were based on emissions factors for the glass fiber manufacturing (Chapter 11.13 of AP-42). The emission factors for glass melting were developed from emission units engaged with melting raw materials (i.e. sand, sodium sulfate, etc.) into molten glass.

The furnaces at the Reedsville Plant are fed cultrate (broken/crushed glass) to be melted into molten glass. Superior's process is approximately 50 percent less energy intense than producing molten glass from sand and other raw materials. Realizing the disconnect between the emission factors of Chapter 11.13 and Superior's melting furnaces, Superior proposed to use emission factors from Chapter 1.4 – Natural Gas Combustion of AP-42. Superior's furnaces are natural gas fired units. However, the emission factors published in Chapter 1.4 were developed from boiler firing on natural gas.

This writer was not satisfied that the use of emission factors from Chapter 1.4 is appropriate for the glass melting furnaces at Reedsville Plant. The temperature needed in melt sand and sodium sulfate into glass ranges from 2,700 to 3,100 degrees Fahrenheit (F). Cullet melts between 2,600 to $2,800^0$F. The temperature in furnace section of industrial boiler should be $2,000^0$F with areas around the burner or combustion zone can be up to $2,800^0$F. Second, the purpose of combustion in boiler is to release heat energy in the fuel to be transferred thought the walls of the furnace zone heat the water, which is different from glass melting furnace that is

changing a solid to liquid state inside the furnace. Using either factor from Chapter 11.13 or 1.4 without any adjustment would not representative of the glass melting furnaces at Superior's facility.

Superior claims that 50 percent less energy is used to melt glass from cullet than from raw materials. To develop a correction factor or approach, Superior presented to methods of estimating potential emissions from the furnaces. One approach was take the average of glass melting and gas-fired boiler emission factors. The second method was just divide the rate from the glass melting by 50%. Superior presented the following comparison, which is present in the following table:

								Average of two rates		50% reduction of original factor	
Parameter	Existing Factor (lb/ton of material processed)	Source	Existing (lb/hr)	Existing (TPY)	Natural Gas Combustion Factor (lb/10^6 SCF)	Emissions (lb/hr)	Emissions (TPY)	Proposed Factor (lb/hr)	Proposed Factor (TPY)	Proposed Factor (lb/hr)	Proposed Factor (TPY)
CO	0.9	Emission Factor AP-42 Section 11.13 Glass Manufacturing Table 11.13-4 (Glass Furnace - Textile, Gas - melter) 0.9 lb/ton of material processed	0.84	3.68	84	0.35	1.53	0.595	2.605	0.42	1.84
NOx	20	Emission Factor AP-42 Section 11.13 Glass Manufacturing Table 11.13-4 (Glass Furnace - Textile, Gas - melter) 20 lb/ton of material processed	18.2	79.72	100	0.41	1.8	9.305	40.76	9.1	39.86
PM	6	Emission Factor AP-42 Section 11.13 Glass Manufacturing Table 11.13-2 (Glass Furnace - Textile, Gas - melter) 6 lb/ton of material processed	5.6	24.53	7.6	0.03	0.13	2.815	12.33	2.8	12.265
SOx	3	Emission Factor AP-42 Section 11.13 Glass Manufacturing Table 11.13-2 (Glass Furnace - textile Gas - recuperative) 3 lb/ton of material processed since Glass furnace - textile, Gas unit melter was ND	2.8	12.26	0.6	0.002	0.01	1.401	6.135	1.4	6.13
VOC	0.3	Emission Factor AP-42 Section 11.15 Glass Manufacturing Table 11.15-2 (pressed and blown - uncontrolled) 0.3 lb/ton of material processed since Glass Fiber furnace - textile, Gas unit melter was ND	0.28	1.23	5.5	0.02	0.09	0.15	0.66	0.14	0.615

Both approaches that the applicant proposed in the above table results in near the same emission rate. The difference between the two approaches are less than a half a percent except for carbon monoxide, which was over 7%. What was unusual in this comparison is the operating parameter that is used to determine the emission rate? The glass melting factor requires the hourly glass-melting rate while the boiler factors need the fuel usage rate, which is a direct function of heat input.

This writer recommends using the average of the two rates approach and applying a fifteen percent (15%) factor to attempt account for variability from the generic emission factor to actual operations.

Table #2 – Emission Rate from Existing Melting & Forming Operations				
Pollutant	Melting		Forming (lb/hr)	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Nitrogen Oxides (NO_x)	10.70	46.87	0	0

Carbon Monoxide (CO)	0.68	2.98	0	0
Particulate Matter (PM)	3.24	14.19	1.50	6.57
Sulfur Dioxide (SO_2)	1.61	7.05	0	0
Volatile Organic Compounds (VOCs)	0.17	0.74	<0.01	0.04
Formaldehyde	0	0	<0.01	0.04
Methanol	0	0	0	0
Total Hazardous Air Pollutants (HAPs)	0	0	<0.01	0.04
Carbon Dioxide Equivalent (CO_2e)	491.8	2,154.08	0	0

Table #3 – Emission Rate from New Melting & Forming Operations				
Pollutant	Melting		Forming	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Nitrogen Oxides (NO_x)	6.07	26.59	0	0
Carbon Monoxide (CO)	0.54	2.37	0	0
Particulate Matter (PM)	1.84	8.06	0.75	3.29
Sulfur Dioxide (SO_2)	0.91	3.99	N/A	0
Volatile Organic Compounds (VOCs)	0.10	0.44	<0.01	0.04
Formaldehyde	N/A	0	<0.01	0.04
Methanol	N/A	0	0	0
Total Hazardous Air Pollutants (HAPs)	N/A	0	<0.01	0.04
Carbon Dioxide Equivalent (CO_2e)	386.42	1,692.52	0	0

Table #4 – Emission Rate from New Oil Spraying, Left-off Table, and Puling & Expanding Operations						
Pollutant	Oil Spraying (Spray-2)		Mat Let-Off Table (Hood-3)		Pulling & Expanding (Hood-4)	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Particulate Matter (PM)	2.50	10.95	0	0	0	0
Volatile Organic Compounds (VOCs)	5.00	21.90	0.05	0.22	0.05	0.22
Formaldehyde	0	0	0.01	0.04	0.01	0.04
Total Hazardous Air Pollutants (HAPs)	0	0	0.01	0.04	0.01	0.04

Table #5 – Emission Rate from New Curing Operations with the RTO		
Pollutant	Curing Oven-2 vented to the CD-3 (lb/hr)	Curing Oven-2 vented to the CD-3 (tpy)
Nitrogen Oxides (NO_x)	2.48	10.86
Carbon Monoxide (CO)	0.48	2.10
Particulate Matter (PM)	0.02	0.12
Sulfur Dioxide (SO_2)	<0.01	0.04
Volatile Organic Compounds (VOCs)	1.04	4.56
Formaldehyde	0.46	2.01
Methanol	0.44	1.93
Total Hazardous Air Pollutants (HAPs)	0.90	3.94
Carbon Dioxide Equivalent (CO_2e)	913.36	4000.52

The annual emissions presented in the above tables was based on the hourly emissions on the maximum operating schedule possible.

The other source of emissions at the Reedsville plant is due to working and breathing losses from storage vessel. To support the proposed expansion, Superior proposed to increase the throughput of liquids through the existing vessels. The projected formaldehyde emission increase due to the throughput was based on an indoor air sampling study using NIOSH Method #2532 conducted in 1993 and was adjusted linearly by 50 percent.

Table #6 – Summary of the Change in Emissions from the Storage & Binder Mixing Tanks				
Vessel	Pollutant	Permit Limit (tpy)	New Potential to Emit (tpy)	Net Difference (tpy)
T-1	VOC	0.1	0.10	0.00
T-2	Formaldehyde	0.009	0.01*	0.001
	VOC	0.045	0.05*	0.005
T-3	Formaldehyde	0.009	0.01*	0.001
	VOC	0.045	0.05*	0.005
T-4	Formaldehyde	0.009	0.01*	0.001
	VOC	0.045	0.05*	0.005
T-5	Ethylene Glycol	0.10	0.10	0.00
T-6	VOC	0.10	0.10	0
T-7	VOC	0.10	0.10	0
T-8	VOC	0.10	0.10	0
T-9	Formaldehyde	0.009	0.02	0.001
	VOC	0.045	0.09	0.005
T-10	Formaldehyde	0.009	0.02	0.01
	VOC	0.045	0.09	0.05

T-11	Formaldehyde	0.009	0.02	0.01
	VOC	0.045	0.09	0.05
T-12	Formaldehyde	0.009	0.02	0.01
	VOC	0.045	0.09	0.05
T-13	Formaldehyde	0.009	0.02	0.01
	VOC	0.045	0.09	0.05
T-14	Formaldehyde	0.009	0.02	0.01
	VOC	0.045	0.09	0.05

* Values were rounded up to the nearest hundreds of ton.

A summary of the change in permitted emission is present in the following section under the discussion concerning 45 CSR 13 applicability.

REGULATORY APPLICABILITY

The following state regulations apply to the Reedsville Plant.

45CSR6 To Prevent and Control Air Pollutant From Combustion of Refuse

The existing and proposed regenerative thermal oxidizer (RTO) are subject to the particulate matter and visible emission standards of this rule for the incineration of gaseous material generated from curing ovens. Manufacturers of oxidizers that are specifically configured to destroy a gaseous stream are usual designed to handle a concentration of specific compound at a specified volumetric instead of flow mass rate of material, which Rule 6 is based on. The existing and proposed oxidizer are designed to handle a volume of 13,300 standard cubic feet per minute (scfm) of exhaust composited with formaldehyde and methanol.

The August 5, 2005 compliance test report contained inlet mas rates of VOC (includes formaldehyde and methanol) from the curing ovens, which average to be 32.41 pounds per hour at a flow rate of 7,125 scfm. Assuming the mass rate of the gaseous material from the curing ovens to be linear, this writer adjusted the mass rate into the RTO at maximum flow conditions of 13,300 scfm, which equates to 60.52 pounds per hour. Using this value and the procedure outlined in 45 CSR §6-4.1.a., the allowable PM rate for this units under Rule 6 is 0.16 pounds per hour of PM. The permitted limit for the existing RTO is 0.06 pounds per hour of PM. Superior estimated the potential to emit of PM from the proposed RTO to be 0.02 pounds per hour. Thus, these RTOs should be capable of meeting the PM standard of this rule.

Rule 6 establishes a visible emission standard for incinerators, which is less than 20 percent opacity. Incinerators designed for materials in a gaseous state and properly installed usually exhibits no visible emissions. From the Inspection Memo dated June 11, 2014, the report indicated that the existing RTO is meeting the opacity standard of 45 CSR §6-4.3.

45CSR7 To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations

The purpose of this rule is to control particulate matter from manufacturing processes and associated operations located in West Virginia. The existing and proposed glass melting furnaces and forming drums are subject to the PM and visible emission standards of Rule 7.

The glass melting furnaces are classified as Type "a" under Rule 7. In addition, Rule 7 has a "duplicate source operation" to be applied to the allowable for any expansion of a manufacturing process (See 45 CSR §7-4.4.) The proposed project would be expanding the glass fiber mat manufacturing capability at the Reedsville Plant, thus the equation outlined in 45 CSR §7-4.1. must be applied to determine the allowable PM rate under Rule 7.

Because melting and forming operations are exhausted inside the manufacturing building (Building 1) before being emitted to the atmosphere, these two manufacturing process operations were combined. The following table was developed to present the corresponding allowable with the potential to emit of each source operation.

Table #6 – Rule 7 PM Allowable for the Expansion

Source	Existing Allowable (lb/hr)	Allowable for the expansion (lb/hr)	Total Allowable (lb/hr)	Proposed Potential PM from Expansion (lb/hr)
New Melting	2.18	1.00	3.18	1.84
New Forming	3.40	1.27	4.67	1.5
Building 1				3.34
New Oil Spray Station	3.75	2.69	6.44[1]	2.50

1 – Allowable for Existing and New Oil Spray Stations.

The allowable particulate matter is greater than the proposed PM rate for the each of the expanded process operations. Thus, when these processes are operating they should meet the applicable requirements of Section 4 of Rule 7.

The existing furnaces and forming stations with other associated activities are located in an industrial building that limits the entrainment of fugitive particulate matter in the atmosphere and should meet the control requirements of 45 CSR §7-5.1.

This rule also establishes a visual emission standard for manufacturing processes, which is 20% opacity. The proposed sources should meet all of the applicable requirements under Rule 7.

45CSR10 To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

45CSR10 (Rule 10) applies to this facility. The gas-fired boiler is exempt from sections 3 through 8, because of Section 9, which exempts fuel-burning units having a heat input under ten (10) million Btu per hour.

Rule 10 also set an allowable for sulfur dioxide from manufacturing processes under Section 4. The total allowable sulfur dioxide emission concentration from manufacturing process source operations is 2,000 parts per million by volume. The converted sulfur dioxide rate from the furnaces, which is 0.94 pounds per hour, into a concentration rate by volume yielded an SO_2 concentration rate of 204 parts per million by volume (ppmvd). This indicates that the proposed furnaces will meet the sulfur dioxide emission concentration standard.

The curing oven with associated RTO has the potential to emit sulfur dioxide emissions. Therefore, Section 4 and Section 5 of Rule 10 would be applicable as well. However, the total amount of sulfur dioxide from this process operation is 87 pounds per year. 45 CSR §10-4.1.e. excludes process source operations that have a potential to emit of 500 pounds per year or less from the 2,000 ppmvd standard. Thus, the curing oven with the RTO is not subject to 45 CSR §10-4.1.

Because the RTO is combusting a waste stream, 45 CSR 10-5.1 is applicable. This rule prohibits the combustion of process waste streams with a hydrogen sulfide concentration of 50 grains per 100 cubic feet of carrier gas. For this process, the curing oven has converted the residual sulfur in the natural gas, which is the source of the sulfur being introduced in the curing oven, into sulfur dioxide before exiting the oven. Thus, the exhaust from the curing oven has no hydrogen sulfide in it. Therefore, the curing oven with associated RTO should meet the limitation of Rule 10.

45 CSR 27 To Prevent and Control the Emissions of Toxic Air Pollutants

This rule requires sources that operate a "chemical processing unit" that treat, store, manufacture, or use toxic air pollutants (TAPs) that have the potential to emit of a TAP greater than the threshold listed in Table 27A to control such emission using the "Best Available Technology" (BAT).

Superior submitted a BAT plan for controlling formaldehyde emissions with this application. Superior has proposed process controls with add-on control device to control the formaldehyde emissions from the expansion to meet the BAT requirements of Rule 27. The main source of potential formaldehyde emissions occurs in the curing oven when the binder is being cured onto the glass fibers. Superior has proposed to route these emissions to the RTO to be destroyed. Superior has proposed to operate the RTO in a manner that the unit will reduce the formaldehyde emissions by at least 98%. In addition to the add-on controls, Superior has proposed to limit the formaldehyde content of the binder to 0.51% as applied to mats.

Under Rule 27, the BAT controls cannot represent a level of control less stringent that any requirement for a similar unit subject to requirements under Parts 60, 61 or 63. For this particular review, Subpart HHHH – National Emission Standard for Hazardous Air Pollutants for

Wet-Formed Fiberglass Mat Production under Part 63. This standard requires formaldehyde to be limited to 0.05 pounds per ton of mat produced or reduce uncontrolled formaldehyde emissions to at least 96%. Superior's proposal exceeds this reduction requirement by 2%. Under Subpart HHHH, the prefered control technology to meet the emission standard of the subpart is to install and operate a thermal oxidizer to reduce formaldehyde emissions from the drying and curing oven.

The writer reviewed the submitted BAT plan for the proposed expansion and concurs with the applicant's recommended level of control for the process.

Rule 27 requires sources to control fugitive sources of TAPs from equipment leaks and storage vessels. 45 CSR §27-2.12. defines "toxic air pollutant service" as any component that makes contact a process stream containing 10% or more by weight of a toxic air pollutant. Superior receives resin with a content of less than 0.1% determine using the ASTM sodium sulfite method. At the facility, the formaldehyde resins are mixed with water and other additives, which dilutes the formaldehyde, contain down further. Thus, the facility should not have any component in TAP service. Superior's process piping should be only in liquid service. This means leaks can be detected using visual means. The writer recommends requiring a Leak Detection and Repair (LDAR) program using visual means to detect leaks and repair such within 15 days of detection as a means to minimize fugitive formaldehyde emissions from equipment leaks.

The storage vessels at the facility have the potential to emit 0.09 tons per year of formaldehyde.

New Source Performance Standards (40 CFR Part 60)

The proposed expansion does not trigger any applicable standard under Part 60.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

Part 63 NESHAP allowable emission limits are established on the basis of a maximum achievable control technology (MACT) determination for a particular major source. Major source under Part 63 is defined as having potential emissions in excess of 25 tpy for total HAP and/or potential emissions in excess of 10 tpy for any individual HAP. The current HAP potential from the Reedsville Plant is 4.05 tons per year. The proposed expansion will increase the potential to emit of HAP up to 8.15 tons per year. After the proposed expansion, the Reedsville Plant will remain classified as an Area (minor) source of HAP since its potential emissions of HAP are less than the 10/25 major source thresholds. Subpart HHHH only applies to wet fiberglass mat production facilities that are major source of HAPs. Thus, Subpart HHHH does not apply to the Reedsville Plant.

40 CFR 63 – Subpart SSSSSS applies to glass manufacturer operations located at area sources of HAPs. Affected sources under this subpart are continuous glass melting operations that introduce HAP metals into the furnace and excludes trace HAP metals in sand. Superior's operations uses cullet and is not an affected source under this subpart. Thus, Subpart SSSSSS is

not applicable to the glass melting operations at the Reedsville Plant. There are no other NESHAPs that identify affected sources that could be related to the proposed expansion.

45CSR13 - Permits for Construction, Modification, Relocation and Operation of Stationary sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed expansion has the potential increase of oxides of nitrogen emissions beyond the modification threshold values of 6 pounds per hour and 10 tons per year. Therefore, the applicant is required to obtain a modification permit in accordance with 45 CSR 13 (Rule 13) for the proposed expansion. The facility has met the applicable requirements of this rule by publishing a Class I Legal Advertisement in the *Dominion Post* on November 21, 2015, paid the administrative update fee, NSPS fee, and submitted a complete permit application.

The following table illustrates the changes of permitted emissions under Permit R13-2501A to the proposed levels in the modification.

Table #7 Summary of Permitted Emission to Proposed Emissions

Pollutant	Current Permit (tpy)	Revised Potential (tpy)	Facility Potential After Expansion (tpy)	Change between Permitted and Expansion (tpy)
$PM/PM_{10}/PM_{2.5}$	35.02	26.57	48.99	13.97
SO_2	12.98	7.10	11.13	-1.85
NO_x	94.11	61.25	98.70	4.59
CO	7.01	6.33	10.80	3.79
VOC	31.97	16.33	39.15	7.18
Total HAPs	4.09	4.09	8.15[1]	4.06
Formaldehyde	2.18	2.18	4.32	2.14
Methanol	1.91	1.91	3.82	1.91

1 – This rate includes ethylene glycol from Tank T-5.

45CSR30 – Requirements For Operating Permits

The facility is currently a minor source with respect to the Title V permit program. The potential emissions as a result of the expansion will not exceed the major source threshold level as defined in 45 CSR 30. Thus, the facility is not subject 45 CSR 30.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The proposed changes to the Reedsville Plant will not change the status of the facility (area source of HAP). Thus, the potential to emit of combined hazardous air pollutants will remain to be less than 25 tons per year for combined HAP with no single hazardous air pollutant (formaldehyde) being greater than 10 tons per year. No new HAP will be emitted from the

facility as a result of the proposed changes. Therefore, no further information was provided on the toxicology of the HAPs emitted at the Reedsville facility.

AIR QUALITY IMPACTS ANALYSIS

This writer deemed that an air dispersion modeling study or analysis was not necessary, because the proposed facility does not represent a major source as defined in 45CSR14.

MONITORING OF OPERATIONS

The existing monitoring of Permit R13-2501A will be applied to include the new emission sources as part of the proposed expansion. Visible emission checks on Emission Points 6, 7, 8, 9 and the roof monitors of Building 1. The temperature of the new RTO will be monitored. The existing record keeping of the resins usage and formaldehyde content of the wet mat entering either curing oven is sufficient.

The writer recommends established a accept level for operating and maintaining the closed vent system to ensure that the exhaust from the curing oven is being completely routed to the control device.

The writer recommends tracking the natural gas usage at the facility. This would ensure compliance with emission limits for the melting operation, curing ovens, RTOs and the boiler.

CHANGES TO PERMIT R13-2501A

Permit R13-2501A has one emission limit table that covers all sources at the facility. It should be noted that the melting and forming operations all vent inside of the building instead of individual emission points at the table implies. This writer recommends subdividing the table by type of source operation (i.e. melting and forming, curing ovens, other operations) into individual conditions with restrictions or requirements that are linked to the corresponding emission limits.

The emission limit for the melting and forming operations were combined as one emission point (Building 1) in Condition 4.1.1.a. Items b, c, and d of this condition outlines the applicable requirements of Rule 7 that pertain to the melting and forming operation. Items e and f outlines restrictions that satisfies compliance with the applicable standards under Rule 10 for the melting and forming operation.

The emission limits for the curing operations were outlined in one condition (Condition 4.1.2.a). In addition, the Rule 6 visible emission standard was incorporated as Condition 4.1.2.b. Item c was established from Condition 4.1.4. in R13-2501A. Condition 4.1.5. was subdivided into three separate items. Item d of Condition 4.1.2. requires the curing ovens to be vented though a closed vent system to the corresponding RTO. Item e then defines the acceptable standard of maintaining and operating the closed vent system which includes incorporating

Condition 4.1.8. of R13-2501A as well. Item f incorporates the destruction efficiency and links it to the minimum temperature of the RTO, which is addressed in Condition 4.1.6. from R13-2501A.

Items g and h incorporates Condition 4.1.3. (production limits and fuel limits). These items were developed to set a maximum natural gas usage rate from these sources to account for all of the natural gas usage at the facility since the facility measures the total gas usage from a common metering point.

Condition 4.1.21. through 4.1.25. of Permit R13-2501A are requirements directly inserted from 45 CSR 27. The permit does not really link the formaldehyde emission limits to Rule 27 or the BAT plan. This writer recommends adding the rule citation of 45 CSR §27-3.1. to the formaldehyde limitations and omitting the direct citations expect for reporting of abnormal releases in 45 CSR §27-10.4, which will be incorporated into as Condition 4.5.1. Condition 4.1.23. of Permit R13-2501A, which is the Rule 27 requirement to control TAPs from tanks, was written in a manner that linked the formaldehyde limits for the tanks being satisfied by resin limitation and locating the vessel indoors as Condition 5.1.3. in the draft.

Permit R13-2501A established limitations and incorporated direct rule citations for the boilers and storage tanks. The writer recommends creating Section 5 for these sources. 45 CSR §2-8.4.b. exempts natural gas fired boilers from the testing and monitoring of visible emission requirements of Section 8 of Rule 2. The gas-fired boiler at the facility is only capable of operating on natural gas. Therefore, Condition 4.2.1. of Permit R13-2501A was omitted and restriction to operate the boiler on natural gas was inserted in 5.1.1.c.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application and the conditions set forth in the permit indicates the facility should meet all applicable state rules and federal regulations when operated. Therefore, the writer recommends that Superior Reedsville Filtration LLC, should be granted a Rule 13 Modification Permit for their proposed expansion of the Reedsville Plant located near Reedsville, WV.

Edward S. Andrews, P.E.
Engineer

Date: June 6, 2016