

Commonwealth of Kentucky
Division for Air Quality
STATEMENT OF BASIS / SUMMARY

Conditional Major, Operating
Permit: F-20-033
Phoenix Fabricators and Erectors Inc.
Sebree, KY 42455
January 7, 2021
Elise Venard, Reviewer

SOURCE ID: 21-233-00078
AGENCY INTEREST: 35816
ACTIVITY: APE20200001

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 3441, Fabricated Structural Metal

Single Source Det. Yes No If Yes, Affiliated Source AI:

Source-wide Limit Yes No If Yes, See Section 4, Table A

28 Source Category Yes No If Yes, Category:

County: Webster

Nonattainment Area N/A PM₁₀ PM_{2.5} CO NO_x SO₂ Ozone Lead
If yes, list Classification:

PTE* greater than 100 tpy for any criteria air pollutant Yes No
If yes, for what pollutant(s)?

PM₁₀ PM_{2.5} CO NO_x SO₂ VOC

PTE* greater than 250 tpy for any criteria air pollutant Yes No
If yes, for what pollutant(s)?

PM₁₀ PM_{2.5} CO NO_x SO₂ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) Yes No

If yes, list which pollutant(s): Ethylbenzene, Methyl Isobutyl Ketone, Methylene Diphenyl Diisocyanate, Xylenes

PTE* greater than 25 tpy for combined HAP Yes No

*PTE does not include self-imposed emission limitations.

Description of Facility:

Phoenix Fabricators and Erectors Inc. fabricate steel elevated water storage tanks in Sebree, KY.

The preparation of steel water storage tank sections, prior to field assembly, involves partial fabrication, surface preparation by steel shot metallic abrasive blasting, and primer/paint application(s). These operations occur in separate buildings and at different times. Steel shot blasting is performed within a blast booth located inside the building which also houses the paint bay. Welding, gouging and cutting operations occur in a separate building and are included as an emission unit.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: F-20-033

Activities: APE20200001

Received: July 30, 2020

Application Complete Date: August 17, 2020

Permit Action: Initial Renewal Significant Rev Minor Rev Administrative

Construction/Modification Requested? Yes No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action Yes No

Description of Action:

On July 30, 2020 an application was received from Phoenix Fabricators and Erectors Inc. for the renewal of their operating permit (F-15-030) for the fabrication of steel elevated water storage tanks in Sebree, KY.

F-20-033 Emission Summary		
Pollutant	2019 Actual (tpy)	PTE F-20-033 (tpy)
PT	0.06	2.74
PM ₁₀	0.06	2.74
PM _{2.5}	0.01	0.87
VOC	0.02	282.70
Hazardous Air Pollutants (HAPs)		
1-Butanol	0	1.52
Ethyl Benzene	0.003	0.78
Methyl Ethyl Ketone	0.00001	25.34
Methyl Isobutyl Ketone	0.001	53.72
Methylene Diphenyl Diisocyanate	0.004	150.41
Xylenes	0.01	175.11
Combined HAPs:	0.02	426.06

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

EU01 (01) Abrasive Blasting				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	20 percent opacity	401 KAR 59:010, Section 3(1)a	N/A	Compliance with requirements for 40 CFR 63, Subpart XXXXXX
PM	2.34 lb/hr ~ 10.8 lb/hr	401 KAR 59:010, Section 3(2)	AP-42, Engineering Estimate	Dust collection system, 99.9 percent C.E., Manufacturer's guarantee

Initial Construction: 2/2004

Process Description:

The blasting equipment is housed in a controlled environment equipped with a full floor reclamation system.

Applicable Regulation:

401 KAR 59:010, *New Process Operations*.

401 KAR 63:002, Section (vvvvv), 40 C.F.R. 63.11514 to 63.11523, Tables 1 to 2 (Subpart XXXXXX), *National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories*.

Comments:

Raw material used: Steel shot blast media

Maximum rated capacity: 11,760 lbs./hour

Location: Blast/paint building

The inside dimensions of the building are 20' wide by 13' high by 50' long, and the room is designed for a "flow thru" workflow with two sets of work doors.

The blast booth is operated under negative pressure and is equipped with a 14,000 ft³/min Hoffman HDFT 4-24 cartridge pulse jet dust collection system. The system includes twenty-four Torit Ultra-web filters with an actual filter area of 6,000 ft². The dust collection system also includes an abrasive inlet plenum, 14-gauge spiral wrap galvanized ductwork, fan, and motor, and a drum collection hopper.

An efficiency of 99.99 percent is assumed for the blasting booth dust collection system for the purpose of calculating PM/PM₁₀ emissions. Emission factors were updated per the 2009 actual emissions.

Potential to emit (PTE) calculations are based on 8760 operating hours per year.

EU02 (02) Paint Spray Booth				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	2.34 lbs./hr.	401 KAR 59:010, Section 3(2)	Material Balance & MSDS with 45 percent Transfer Efficiency	Filters, 99.9 percent C.E., Manufacturer's guarantee

EU02 (02) Paint Spray Booth				
PM	20 percent opacity	401 KAR 59:010, Section 3(1)a	N/A	Recordkeeping of weekly visual observations
VOC	Source wide 90 tpy	To preclude 401 KAR 52:020	Material Balance & MSDS	Monthly emission calculations and a new rolling 12-month total
Individual HAP	Source wide 9.0 tpy	To preclude 401 KAR 52:020	Material Balance & MSDS	Monthly emission calculations and a new rolling 12-month total
Combined HAP	Source wide 22.5 tpy	To preclude 401 KAR 52:020	Material Balance & MSDS	Monthly emission calculations and a new rolling 12-month total
Ethyl Benzene	Source wide 5.2 tpy	401 KAR 63:020	Material Balance & MSDS	Monthly emission calculations and a new rolling 12-month total
Methyl Diphenyl Diisocyanate	Source wide 0.66 tpy	401 KAR 63:020	Material Balance & MSDS	Monthly emission calculations and a new rolling 12-month total

Initial Construction: 2/2004

Process Description:

Priming/painting of steel water tanks utilizing one (1) airless operated spray gun.

Applicable Regulation:

401 KAR 59:010, *New Process Operations.*

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances.*

Precluded Regulations:

401 KAR 52:020, *Title V Permits.*

401 KAR 51:017, *Prevention of significant deterioration of air quality.*

Comments:

Raw materials used: Paint and solvent.

Maximum rated capacity: 12.5 gallons/hour of paint mixed with solvent.

Transfer efficiency: 45%

Location: Blast/paint building

The painting facility consists of a paint bay that is 110 feet long by 40 feet wide by 23 feet high with negative airflow forming an air curtain at the open end of the room. The paint bay is equipped with two (2) Aerovent, 60,000 ft³/min air make-up units. The air is filtered for particulates and then exhausted. The sloped exhaust system is equipped with four (4) one (1) inch, Supraloft 100D tackified polyester, diffusion media roll type filters. The filters are three feet wide and eighty feet long. These filters create an evenly diffused air flow pattern throughout the filter.

The painting operation utilizes one airless operated spray gun. Prior to application, paint is mixed with a solvent, methyl ethyl ketone (MEK).

Volatile organic compounds (VOC) and PM/PM₁₀ emissions from painting are calculated by mass balance.

EU02 (02) Paint Spray Booth

An efficiency of 99.9% is assumed for the polyester, diffusion media roll type filter for the purpose of calculating PM/PM₁₀ emissions.

EU03 (03) Welding, Cutting, and Gouging Activities

Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	20 percent opacity	401 KAR 59:010, Section 3(1)a	N/A	Compliance with requirements for 40 CFR 63, Subpart XXXXXX
PM	2.34 lbs./hr.	401 KAR 59:010, Section 3(2)	AP-42, Engineering Estimate	Building Enclosure, 70% C.E

Initial Construction: 2/2004

Process Description:

Welding, gouging & cutting operations

Applicable Regulation:

401 KAR 59:010, *New Process Operations*.

401 KAR 63:002, Section (vvvvv), 40 C.F.R. 63.11514 to 63.11523, Tables 1 to 2 (Subpart XXXXXX), *National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories*.

Comments:

Raw material used: Welding Rods/Wire

Maximum rated capacity: 4.1 lbs./hour

Welding, gouging & cutting operations. Potential emission calculations were based on a building enclosure control of 70%.

Emissions were calculated based on AP 42 factors and MSDS information.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements/Results

N/A

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
90 tpy of VOC emissions	401 KAR 52:030	Source-wide
9.0 tpy of individual HAP emissions	401 KAR 52:030	Source-wide
22.5 tpy of combined HAP emissions	401 KAR 52:030	Source-wide
5.2 tpy of Ethyl Benzene	401 KAR 63:020	EP02
0.66 tpy of Methyl Diphenyl Diisocyanate	401 KAR 63:020	EP02

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:010 , <i>New Process Operations.</i>	EP01, EP03
401 KAR 63:002, Section (vvvvv) , 40 C.F.R. 63.11514 to 63.11523, Tables 1 to 2 (Subpart XXXXXX), <i>National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories.</i>	EP01, EP03
401 KAR 63:020 , <i>Potentially Hazardous Matter or Toxic Substances.</i>	EP02

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Unit
401 KAR 52:020 , <i>Title V Permits.</i>	Source-wide
401 KAR 51:017 , <i>Prevention of significant deterioration of air quality.</i>	Source-wide

Table D - Summary of Non Applicable Regulations:

Non Applicable Regulations	Emission Unit
N/A	

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

Air Toxic Analysis

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*

The Division for Air Quality (Division) has performed AERMOD on August 4, 2015 of potentially hazardous matter or toxic substances (Ethyl Benzene, Methyl Isobutyl Ketone, Methylene Diphenyl Diisocyanate, Xylene Chromium VI, Cobalt, Manganese, Nickel) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination

N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
F-05-028	Initial	APE20040001	12/19/2003	11/17/2005	Initial Permit	N/A
F-10-034	Renewal	APE20100001	7/12/2010	1/3/2011	Renewal Operating Permit	N/A
F-15-030	Renewal	APE20150001	9/2/2015	1/4/2016	Renewal Operating Permit	N/A

SECTION 6 – PERMIT APPLICATION HISTORY

None

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS	– Ambient Air Quality Standards
BACT	– Best Available Control Technology
Btu	– British thermal unit
CAM	– Compliance Assurance Monitoring
CO	– Carbon Monoxide
Division	– Kentucky Division for Air Quality
ESP	– Electrostatic Precipitator
GHG	– Greenhouse Gas
HAP	– Hazardous Air Pollutant
HF	– Hydrogen Fluoride (Gaseous)
MSDS	– Material Safety Data Sheets
mmHg	– Millimeter of mercury column height
NAAQS	– National Ambient Air Quality Standards
NESHAP	– National Emissions Standards for Hazardous Air Pollutants
NO _x	– Nitrogen Oxides
NSR	– New Source Review
PM	– Particulate Matter
PM ₁₀	– Particulate Matter equal to or smaller than 10 micrometers
PM _{2.5}	– Particulate Matter equal to or smaller than 2.5 micrometers
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
SO ₂	– Sulfur Dioxide
TF	– Total Fluoride (Particulate & Gaseous)
VOC	– Volatile Organic Compounds