**Commonwealth of Kentucky**
**Division for Air Quality**

# *STATEMENT OF BASIS / SUMMARY*

Conditional Major, Construction / Operating
PERMIT ID: F-23-049
Sonne Steel, Incorporated
48 Regina Lane,
Smithfield, KY 40068
February 20, 2024
William Parsons, Reviewer
Source ID: 21-103-00042
Agency Interest #: 177435
Activity ID: APE20230001

## Table of Contents

## 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: Henry
Nonattainment Area ☒ N/A ☐ $PM_{10}$ ☐ $PM_{2.5}$ ☐ CO ☐ $NO_X$ ☐ $SO_2$ ☐ Ozone ☐ Lead
If yes, list Classification:

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☐ $PM_{10}$ ☐ $PM_{2.5}$ ☐ CO ☐ $NO_X$ ☐ $SO_2$ ☒ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☐ Yes ☒ No
If yes, for what pollutant(s)?
☐ $PM_{10}$ ☐ $PM_{2.5}$ ☐ CO ☐ $NO_X$ ☐ $SO_2$ ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☒ Yes ☐ No
If yes, list which pollutant(s): Xylenes

PTE* greater than 25 tpy for combined HAP ☒ Yes ☐ No

*PTE does not include self-imposed emission limitations.

Description of Facility:
Sonne Steel, Inc. fabricates steel products such as beams, stair towers, and railings for commercial, industrial, and residential applications.

## SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: F-23-049 Activity: APE20230001

Application Received: 9/1/2023 Application Complete: 11/30/2023

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:**
The Division received an application from Sonne Steel, Inc. on September 1, 2023 for a conditional major initial permit.

Regarding the applicability of 40 CFR 63 Subpart XXXXXX and metalworking and plasma cutting insignificant activities in the permit, the metalworking saws are exempt due to the use of metalworking fluid exempting these activities from the 40 CFR 63 Subpart XXXXXX definition of machining, and plasma cutting is exempted in question 35 in *Nine Metal Fabrication and Finishing Area Source Categories 40 CFR Part 63 Subpart XXXXXX (6X) NESHAP Questions & Answers Revised June 2020.*

| F-23-049 Emission Summary | |
|---|---|
| Pollutant | PTE F-23-049 (tpy) |
| CO | N/A |
| NOx | N/A |
| PT | 15.69 |
| $PM_{10}$ | 15.61 |
| $PM_{2.5}$ | 15.57 |
| $SO_2$ | N/A |
| VOC | 203.4* |
| Lead | N/A |
| Greenhouse Gases (GHGs) | |
| Carbon Dioxide | N/A |
| Methane | N/A |
| Nitrous Oxide | N/A |
| $CO_2$ Equivalent ($CO_2e$) | N/A |
| Hazardous Air Pollutants (HAPs) | |
| Ethyl Benzene | 9.35 |
| Manganese | 0.056 |
| Toluene | 4.69 |
| Xylenes (Total) | 31.40* |
| Combined HAPs: | 45.78* |

* The source has federally enforceable source-wide limits of 90 tpy VOC, 9 tpy single HAP, and 22.5 tpy combined HAPs to ensure the source remains under major source thresholds.

## SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

| Emission Unit #01 (EP01) Spray Coating Booth | | | | |
|---|---|---|---|---|
| **Pollutant** | **Emission Limit or Standard** | **Regulatory Basis for Emission Limit or Standard** | **Emission Factor Used and Basis** | **Compliance Method** |
| VOC | Source-wide 90 tpy | 401 KAR 52:030 | Material Balance & MSDS | Recordkeeping Requirements |
| Single HAP | Source-wide 9 tpy | 401 KAR 52:030 | Material Balance & MSDS | Recordkeeping Requirements |
| Combined HAP | Source-wide 22.5 tpy | 401 KAR 52:030 | Material Balance & MSDS | Recordkeeping Requirements |
| PM | 2.34 lbs/hr | 401 KAR 59:010, Section 3(2) | Material Balance & SDS | Fabric Filter C.E. 96%, Transfer Efficiency 60% |
| Opacity | 20% opacity | 401 KAR 59:010, Section 3(1) | N/A | Weekly Stack Visual Observation |
| Ethyl Benzene | Source-wide 5.08 tpy | 401 KAR 63:020 | Material Balance & SDS | Recordkeeping Requirements |

**Initial Construction Date:** 3/2021

**Process Description:**
Spray booth for primer application on metal substrates.
Controls: Fabric filter to control PM/$PM_{10}$/$PM_{2.5}$ emissions
Control Efficiency: 96%
Capacity: 14.25 gallons per hour primer, 0.75 gallons per hour thinner

**Applicable Regulation:**
**401 KAR 59:010,** *New process operations* applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR Chapter 59, commenced on or after the July 2, 1975.

**State-Origin Requirements:**
**401 KAR 63:020,** *Potentially hazardous matter or toxic substances,* applicable to each affected facility which emits or may emit potentially hazardous matter or toxic substances as defined in Section 2 of 401 KAR 63:020, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality.

**Comments:**
Emissions are calculated using material balances and SDS information. The transfer efficiency for particulate solids from the spray gun is assumed to be 60%. The filter efficiency is 96%.

40 CFR 63 Subpart HHHHHH, National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources does not apply because the facility does not apply coatings containing target HAP as defined in 40 CFR 63.11180.

| Emission Unit #01 (EP01) Spray Coating Booth |
|---|
| 40 CFR 63 Subpart XXXXXX, National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories does not apply to this activity because the facility does not perform spray-applied painting operations using paints which contain metal fabrication and finishing HAP as defined in 40 CFR 63.11522. |

**Emission Unit #02 (EP02) GMAW/MIG Welding**

| Pollutant | Emission Limit or Standard | Regulatory Basis for Emission Limit or Standard | Emission Factor Used and Basis | Compliance Method |
|---|---|---|---|---|
| Single HAP | Source-wide 9 tpy | 401 KAR 52:030 | AP-42 Factors and Wire Composition Information | Recordkeeping Requirements |
| Combined HAP | Source-wide 22.5 tpy | 401 KAR 52:030 | AP-42 Factors and Wire Composition Information | Recordkeeping Requirements |
| PM | 2.34 lbs/hr | 401 KAR 59:010, Section 3(2) | AP-42 Factors | Building Enclosure C.E. 70%, Subpart XXXXXX Management Practices |
| Opacity | 20% opacity | 401 KAR 59:010, Section 3(1) | N/A | Visual Determinations on a graduated schedule 40 CFR 63.11517(b) |
| Manganese | Source-wide 0.0362 tpy | 401 KAR 63:020 | AP-42 Factors and Wire Composition Information | Recordkeeping Requirements |

**Initial Construction Date:** 3/2021

**Process Description:**
GMAW/MIG welding activities (10 welding units)
Controls: Building enclosure to control PM/$PM_{10}$/$PM_{2.5}$ emissions
Control Efficiency: 70%
Capacity: 2.24 lbs/hr of welding wire consumed for all units combined

**Applicable Regulation:**
**401 KAR 59:010,** *New process operations* applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR Chapter 59, commenced on or after the July 2, 1975.

**401 KAR 63:002, Section 2(4)(vvvvv) 40 C.F.R. 63.11514 through 63.11523, Tables 1 through 2 (Subpart XXXXXX),** *National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories* applies to an area source that is primarily engaged in the operations in one of the nine source categories. The facility's SIC code of 3441 makes it a fabricated structural metal manufacturing source.

**Comments:**
Particulate matter emissions are calculated using the AP-42 Chapter 12.19 factor for E70S wire of 5.2 lbs PM per 1000 lbs of electrode consumed. HAP emissions were calculated using the composition

| Emission Unit #02 (EP02) GMAW/MIG Welding |
|---|
| information supplied by the facility for their welding wire. 70% PM control is assumed for operating within a building enclosure. |

| Emission Unit #04 (EP04) Python X Robotic Steel Fabrication System (Plasma Cutting) | | | | |
|---|---|---|---|---|
| **Pollutant** | **Emission Limit or Standard** | **Regulatory Basis for Emission Limit or Standard** | **Emission Factor Used and Basis** | **Compliance Method** |
| Single HAP | Source-wide 9 tpy | 401 KAR 52:030 | PM Factor and Metal Composition Information | Recordkeeping Requirements |
| Combined HAP | Source-wide 22.5 tpy | 401 KAR 52:030 | PM Factor and Metal Composition Information | Recordkeeping Requirements |
| PM | 2.34 lbs/hr | 401 KAR 59:010, Section 3(2) | 7% Of metal removed | Building Enclosure C.E. 70%, Dust Collector C.E. 90%, |
| Opacity | 20% opacity | 401 KAR 59:010, Section 3(1) | N/A | Visual Determinations on a graduated schedule 40 CFR 63.11517(b) |
| Manganese | Source-wide 0.0362 tpy | 401 KAR 63:020 | PM Factor and Wire Composition Information | Recordkeeping Requirements |

**Initial Construction Date:** 3/2021

**Process Description:**
Robotic plasma cutting system
Construction Date: March 2021
Controls: 1. Dust Collector to control PM/$PM_{10}$/$PM_{2.5}$ emissions
2. Building enclosure to control PM/PM10/PM2.5 emissions
Control Efficiency: 90% dust collector, 70% building
Capacity: 161.03 lbs/hr of metal removed

**Applicable Regulation:**
**401 KAR 59:010,** *New process operations* applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR Chapter 59, commenced on or after the July 2, 1975.

**State-Origin Requirements:**
**401 KAR 63:020,** *Potentially hazardous matter or toxic substances,* applicable to each affected facility which emits or may emit potentially hazardous matter or toxic substances as defined in Section 2 of 401 KAR 63:020, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality.

**Comments:**
Particulate matter emissions are calculated using the *Emission of Fume, Nitrogen Oxides and Noise in Plasma Cutting of Stainless and Mild Steel* document supplied on the U.S. EPA's AP-42 website. Dry

| Emission Unit #04 (EP04) Python X Robotic Steel Fabrication System (Plasma Cutting) |
|---|
| stainless steel of 8mm thickness and 3.5 m/min cutting speed emits 7% of material removed as fume. HAP emissions were calculated using the composition information supplied by the facility for their steel. 70% PM control is assumed for operating within a building enclosure. An additional 90% PM control is assumed for the use of the dust collector.<br><br>40 CFR 63 Subpart XXXXXX, National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories does not apply to plasma cutting as stated in the response to question 35 in *Nine Metal Fabrication and Finishing Area Source Categories 40 CFR Part 63 Subpart XXXXXX (6X) NESHAP Questions & Answers Revised June 2020.* https://www.epa.gov/sites/default/files/2020-06/documents/qa-6x-9metal-fabricationfinishing-areaneshap-06-22-20.pdf |

## SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

**Testing Requirements\Results**

| Emission Unit(s) | Control Device | Parameter | Regulatory Basis | Frequency | Test Method | Permit Limit | Test Result | Thruput and Operating Parameter(s) Established During Test | Activity Graybar | Date of last Compliance Testing |
|---|---|---|---|---|---|---|---|---|---|---|
| N/A | | | | | | | | | | |

**Footnotes:**

## 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, *Federally-enforceable permits for nonmajor sources* | Source-wide |
| 9.0 tpy of individual HAP emissions | To preclude major source status for HAP | Source-wide |
| 22.5 tpy of combined HAP emissions | To preclude major source status for HAP | Source-wide |
| 5.08 tpy of ethyl benzene | 401 KAR 63:020 | Source-wide |
| 0.0362 tpy of manganese | 401 KAR 63:020 | Source-wide |

**Table B - Summary of Applicable Regulations:**

| Applicable Regulations | Emission Unit |
|---|---|
| 401 KAR 59:010, New process operations | 01, 02, 04 |
| *401 KAR 63:020, Potentially hazardous matter or toxic substances* | 01, 04 |
| *401 KAR 63:002, Section 2(4)(vvvvv) 40 C.F.R. 63.11514 through 63.11523, Tables 1 through 2 (Subpart XXXXXX), National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories* | 02 |

**Table C - Summary of Precluded Regulations:**

| Precluded Regulations | Emission Unit |
|---|---|
| 401 KAR 52:020, *Title V Permits* | |

**Table D - Summary of Non Applicable Regulations:**

| Non Applicable Regulations | Emission Unit |
|---|---|
| N/A | |

## Air Toxic Analysis

**401 KAR 63:020**, *Potentially Hazardous Matter or Toxic Substances*
The Division for Air Quality (Division) has performed modeling using AERMOD on February 1, 2024 of potentially hazardous matter or toxic substances (Cumene, Ethylbenzene, Manganese, Nickel, Toluene, Xylenes) 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 |
|---|---|---|---|---|---|---|
| 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