Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Conditional Major, Operating
PERMIT ID: F-24-024
Mazak Corporation
6850 Industrial Road, Florence, KY 41042
June 13, 2024
Jonathon Hughes, Reviewer
Source ID: 21-117-00141
Agency Interest #: 11545
Activity ID: APE20240001

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SECTION 1 - SOURCE DESCRIPTION

SIC Code and description: 3541, Machine Tools, Metal Cutting Types.

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: N/A

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

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): Ethyl Benzene, Xylenes

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

*PTE does not include self-imposed emission limitations.

Description of Facility:
Mazak Corporation produces metal cutting machinery for industrial applications.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: F-24-024 Activity: APE20240001

Application Received: 3/28/2024 Application Complete: 4/16/2024

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:
Renewal of conditional major permit with no major changes aside from updating spray gun capacity throughputs and coating materials/mixing ratios used. Additionally, the following 502(b)(10) change is incorporated:

APE20200001: Addition of touch up paint booth, Division approval issued 8/14/2020.

F-24-024 Emission Summary		
Pollutant	2023 Actual (tpy)	PTE F-24-024 (tpy)
CO	1.05	5.06
NOx	1.25	6.03
PT	0.04	1.80
PM_{10}	0.04	1.80
$PM_{2.5}$	0.03	1.80
SO_2	0.01	0.04
VOC	2.26	320*
Lead	0	0.00003
Greenhouse Gases (GHGs)		
Carbon Dioxide	1501	7192
Methane	0.03	0.136
Nitrous Oxide	0.03	0.014
CO_2 Equivalent (CO_2e)	1511	7200
Hazardous Air Pollutants (HAPs)		
Ethyl Benzene	0.014	16.4*
Xylenes (Total)	0.061	48.6*
Combined HAPs:	0.13	65.1*

*Note: Emissions limited by federally-enforceable emission limitations to ensure the source remains below major source thresholds to be classified as major stationary source as defined in 401 KAR 52:001 and 401 KAR 51:001.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit 01 Cold Cleaning Degreasers
Initial Construction Date: ID#1 1990, ID#2 1995, ID#3 1997, ID#9 2017, ID#10 2015, ID#11, 2011 **Process Description:** Cold Cleaning Degreasers **Applicable Regulation:** 401 KAR 59:185, New solvent metal cleaning equipment **Comments:** Emission factors for emission calculations are taken from AP-42.4.6, (0.4 kg/hr/m^2).

Emission Unit #03 Painting of Castings and Emission Unit #04 Painting of Sheet Metal				
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, 65% Paint PM Transfer Efficiency	Dry Filter, 99% C.E.
	20% opacity	401 KAR 59:010, Section 3(1)	N/A	Weekly Stack Visual Observation
VOC	20 tons/year	401 KAR 59:225 Section 6(3)	Material Balance & MSDS	Recordkeeping Requirements
Single HAP	9.0 tpy of individual HAP emissions	To Preclude 401 KAR 52:020	Material Balance & MSDS	Recordkeeping Requirements
Combined HAP	22.5 tpy of combined HAP emissions	To Preclude 401 KAR 52:020	Material Balance & MSDS	Recordkeeping Requirements

Initial Construction Date: EU03 (6/1990), EU04 (12/2013)

Process Description:
Emission Unit 03: Two "Binks" 3-sided spray booths (12' x 24' x 10') for coating of metal parts. Each spray gun has a maximum throughput of 7.5 gallons per hour. Each booth utilizes dry filters for control of particulate emissions. Surface coating is accomplished with two spray guns for topcoat application and two spray guns for primer application. Cleanup solvent is acetone.

Emission Unit 04: One "COL-MET" enclosed spray booth for coating of metal parts. The booth utilizes dry filters for control of particulate emissions. Surface coating is accomplished with two spray guns for topcoat application and two spray guns for primer application. Only one spray gun is used at one time. Cleanup solvent is acetone.

Emission Unit #03 Painting of Castings and Emission Unit #04 Painting of Sheet Metal

Applicable Regulation:
401 KAR 59:010, *New process operations*

State Origin Requirement
401 KAR 63:020, *Potentially hazardous matter and toxic substance emissions*

Precluded Regulations:
401 KAR 59:225, *New miscellaneous metal parts and products surface coating operations*

Comments:
The emissions from painting are calculated using mass balances.

For the as applied primer, a ratio of 3 parts primer, 1 part thinner and 1 part hardener is used.

For the as applied top coat, a ratio of 8 parts paint, 1 part thinner and 2 parts hardener is used.

A transfer efficiency of 65% is assumed for calculating PM/PM_{10} emissions. A particulate matter control efficiency of 99% is assumed for the spray booth filters.

An affected facility shall be exempt from 401 KAR 59:225 if the total VOC emissions from all affected facilities subject to 401 KAR 59:225 are less than or equal to twenty (20) tons per year.

Ethyl Benzene did not pass initial Screen View modeling in APE20240001 and required refined AERMOD modeling. The results of the refined modeling indicate that emissions of Ethyl Benzene are in compliance with the standard and no limit is required.

Emission Unit #05 and #06, 5 stage Washer Burners				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.56 lb/MMBtu	401 KAR 59:015, Section 4(1)(a)	AP-42 Chapter 1.4.	Assumed based upon natural gas combustion
	20% opacity	401 KAR 59:015, Section 4(2)	N/A	Assumed based upon natural gas combustion
SO_2	3 lbs/MMBtu	401 KAR 59:015, Section 5(1)(a)	AP-42 Chapter 1.4.	Assumed based upon natural gas combustion

Initial Construction Date: (7/1998)

Process Description:
EU05, 3.5 MMBtu/hr Natural Gas Burner
EU06, 2.5 MMBtu/hr Natural Gas Burner

Applicable Regulation:
401 KAR 59:015, *New indirect heat exchangers*

Comments:
Emissions were estimated using AP-42.1.4 emission factors. The total heat input capacity of all 401 KAR 59:015 affected facilities equals 6 MMBtu/hr.

Emission Unit 14 Touch-Up Paint Booth and Aerosol Spray Can Touch-Up Painting

Initial Construction Date: (4/1994)

Process Description:
This activity covers aerosol paint can spraying at the facility.

Applicable Regulation:
401 KAR 59:010, *New process operations*

State Origin Requirement
401 KAR 63:020, *Potentially hazardous matter and toxic substance emissions*

Comments:
Some spraying is done within the booth, some of it is not. For this reason, no particulate matter control efficiency is assumed for this activity. No spray guns are used within the booth.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results

N/A

Footnotes:

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
20 tpy of VOC emissions	To preclude 401 KAR 52:020 and 401 KAR 59:225	Source-wide
9.0 tpy of individual HAP emissions	To preclude 401 KAR 52:020	Source-wide
22.5 tpy of combined HAP emissions	To preclude 401 KAR 52:020	Source-wide

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:010, *New process operations.*	03, 04, 14
401 KAR 59:015, *New indirect heat exchangers.*	05, 06
401 KAR 59:185, *New solvent metal cleaning equipment*.	01
401 KAR 63:020, *Potentially hazardous matter or toxic substances.*	03, 04, 14

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Unit
401 KAR 59:225, *New miscellaneous metal parts and products surface coating operations.*	Source-wide

Table D - Summary of Non Applicable Regulations:
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 SCREEN View on June 13, 2024 of potentially hazardous matter or toxic substances (1,6-Hexamethylene Diisocyanate, 1-Methoxy-2-Propanol, Ethyl Benzene, Toluene and 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.

The Division for Air Quality (Division) has performed modeling using AERMOD on June 14, 2024 of potentially hazardous matter or toxic substances (Ethyl Benzene) 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-09-022	Initial	APE20090001	5/26/2009	9/3/2009	Initial Operating Permit	Syn Minor
F-09-022 R1	Minor Revision	APE20110003	1/13/2012	1/30/2012	Addition of the 6th cold cleaner	N/A
F-09-022 R2	Minor Revision	APE20130001	8/28/2013	9/5/2013	Addition of the 7th cold cleaner	N/A
F-14-015	Renewal	APE20140001	3/1/2014	7/8/2014	Renewal Operating Permit	N/A
F-14-015 R1	Minor Revision	APE20170001	7/25/2017	8/14/2017	Addition of Two Degreasers	N/A
F-19-006	Renewal	APE20180003	2/7/2019	9/1/2019	Renewal and Update coatings	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