Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Conditional Major / Synthetic Minor, Construction / Operating
PERMIT ID: F-24-001
Aerospace Composites Solutions Inc.
1781 Veterans Way
Morgantown, KY 42261

January 24, 2024
Jonathon Hughes, Reviewer

Source ID: 21-031-00066
Agency Interest #: 180294
Activity ID: APE20230001

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SECTION 1 - SOURCE DESCRIPTION

SIC Code and description: 3728, Aircraft Parts and Auxiliary Equipment

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: Butler
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): Styrene, Toluene, Xylenes

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

*PTE does not include self-imposed emission limitations.

Description of Facility:
Aerospace Composites Solutions, Inc. is a composite equipment manufacturing facility in Morgantown, KY. The facility manufactures high-grade composite equipment for the aviation industry. Their facility has the capability to design, prototype, and build these composite components.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: F-24-001 Activity: APE20230001

Application Received: 12/12/2023 Application Complete: 1/9/2024

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:
The company (AI 43580) is moving their current operation (F-22-053) at 404 West Morrison Street in Morgantown to a larger facility at 1781 Veterans Way, also in Morgantown. This application is for an initial conditional major/synthetic minor permit at the new location. Some equipment from the old location is being moved to the new location (Spray Booth #3 (EU 03), Hand Applied Coatings (EU 04), a curing oven, spray gun cleaner and a welding unit). New equipment includes one paint booth (Spray Booth #4, EU 05) identical to Spray Booth #3 (EU 03), a Grit Blast Booth (EU 06) and an additional curing oven.

F-24-001 Emission Summary		
Pollutant	2023 Actual (tpy)	PTE F-24-001 (tpy)
CO	NA	1.36
NOx	NA	1.62
PT	NA	15.6*
PM_{10}	NA	15.6*
$PM_{2.5}$	NA	15.6*
SO_2	NA	0.01
VOC	NA	1293**
Lead	NA	0
Greenhouse Gases (GHGs)		
Carbon Dioxide	NA	1936
Methane	NA	0.037
Nitrous Oxide	NA	0.004
CO_2 Equivalent (CO_2e)	NA	1938
Hazardous Air Pollutants (HAPs)		
Ethylbenzene	NA	3.01
1,6-Hexamethylene Diisocyante	NA	0.035
Methyl Isobutyl Ketone	NA	7.93
Methyl Methacrylate	NA	187**
N,N-Dimethylaniline	NA	2.65
Phenol	NA	3.72
Styrene	NA	1120**
Toluene	NA	23.9**
2,4-Toluene Diisocyanate	NA	0.074
Xylenes (Total)	NA	16.5**
Combined HAPs:	NA	1366**

*Controlled emissions.
**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 03 Spray Coating Booth #3 – Painting Booth Emission Unit 05 Spray Coating Booth #4 – Painting Booth				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	20% opacity	401 KAR 59:010, Section 3(1)	N/A	Weekly visual observation
	2.34 lbs/hr	401 KAR 59:010, Section 3(2)	Material Balance & SDS, 70% T.E.	Fabric filters, 98.7% C.E., Manufacturer's guarantee
Single HAP	Source wide 9 tpy	401 KAR 52:030	Material Balance & SDS	Monthly recordkeeping 12-month rolling total
Combined HAP	Source wide 22.5 tpy	401 KAR 52:030	Material Balance & SDS	Monthly recordkeeping 12-month rolling total
PM/PM_{10}	Source wide 90 tpy	401 KAR 52:030	Material Balance & SDS, 70% T.E.	Monthly recordkeeping 12-month rolling total
VOC	Source wide 90 tpy	401 KAR 52:030	Material Balance & SDS	Monthly recordkeeping 12-month rolling total
1,6-Hexamethylene Diisocyanate	Source wide 0.0218 tpy	401 KAR 63:020	Material Balance & SDS * 10% (90% assumed reacted) See Comments	Monthly recordkeeping 12-month rolling total
2,4- Toluene Diisocyanate	Source wide 0.018 tpy	401 KAR 63:020	Material Balance & SDS	Monthly recordkeeping 12-month rolling total

Initial Construction Date: See below

Process Description:

Emission Unit 03 Spray Coating Booth #3 – Painting Booth

Description:

One spray booth, used for painting operations, equipped with two (2) HVLP (high volume low pressure) spray guns. Only one spray gun is usable at a time. 70% transfer efficiency assumed. Maximum throughput, 1.93 gal/hr.

Construction Date: Proposed 2024
Controls: Fabric Filters, 98.7% control efficiency (C.E.)
Transfer Efficiency: 70% for particulate matter (T.E.)

Emission Unit 05 Spray Coating Booth #4 – Painting Booth

Description:

One spray booth, used for painting operations, equipped with two (2) HVLP (high volume low pressure) spray guns. Only one spray gun is usable at a time. Maximum throughput, 1.93 gal/hr.

Emission Unit 03 Spray Coating Booth #3 – Painting Booth
Emission Unit 05 Spray Coating Booth #4 – Painting Booth

This booth also has a Graco chopper gun, used independently from the 2 HVLP spray guns, for application of a high solids content resin/gel coating. Maximum throughput, 90 gal/hr.

Construction Date: Proposed 2024
Controls: Fabric Filters, 98.7% control efficiency
Transfer Efficiency: 70% for particulate matter

Applicable Regulations:
401 KAR 59:010, New process operations**.** This regulation is applicable to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.

401 KAR 63:020, Potentially hazardous matter or toxic substances, applies to all toxic air emissions.

Precluded Regulation:
401 KAR 50:012, General application is precluded since the facility has requested a VOC emission limit below a major source threshold.

Comments:
Each paint booth contains eight Koch MaxiGrid panel inlet filters and sixteen Koch Spray Stop fiberglass exhaust filters. The exhaust filters have a control efficiency of 98.7% as determined by the manufacturer. Throughputs for the spray guns were determined by on-site testing. Transfer efficiency is assumed to be 70% based on the nature of the coatings applied and the substrate used.

Emission factor for Hexamethylene Diisocyanate (HDI) is based on coating with highest percentage per SDS multipled by 0.1. It is assumed that 90% of the HDI is reacted to form other compounds and only 10% of the HDI sprayed is emitted as HDI. This adjustment factor is from a study conducted by the Ontario Minestry of the Environment found at https://www.ontario.ca/page/emission-factors-16-hexamethylene-diisocyanate-hdi-emissions-spray-booth-operations.

401 KAR 63:002, Section 2(4)(w) 40 C.F.R. 63.741 through 63.759, Table 1, and Appendix A (Subpart GG), National Emission Standards for Aerospace Manufacturing and Rework Facilities does not apply because the facility is not a major source as defined by 40 CFR 63.2 (40 CFR 63.741(a)).

401 KAR 63:002, Section 2(4)(iiiii) 40 C.F.R. 63.11169 through 63.11180, Table 1 (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 utilizes coatings that do not contain the target HAPs defined in 40 CFR 63.11180 [compounds of chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd)]

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 does not apply because the facilitiy is listed under SIC code 3728 which does not appear in the subpart's list of applicable SIC codes.

Emission Unit #04 Hand Applied Materials				
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	Material Balance & SDS	Monthly recordkeeping and emission calculation
Combined HAP	Source wide 22.5 tpy	401 KAR 52:030	Material Balance & SDS	Monthly recordkeeping and emission calculation
VOC	Source wide 90 tpy	401 KAR 52:030	Material Balance & SDS	Monthly recordkeeping and emission calculation

Initial Construction Date: Proposed 2024

Process Description:
Various forms of adhesive, sealers and fillers are applied on-site by hand using popsicle sticks and tongue depressors. Transfer efficiency is assumed to be 100%.

Applicable Regulation:
401 KAR 63:020, Potentially hazardous matter or toxic substances, applies to all toxic air emissions.

Precluded Regulations:
401 KAR 50:012, General application is precluded since the facility has requested a VOC emission limit below a major source threshold.

Comments:
No particulate matter is expected to be emitted due to the method in which coatings are applied.

401 KAR 63:002, Section 2(4)(w) 40 C.F.R. 63.741 through 63.759, Table 1, and Appendix A (Subpart GG), National Emission Standards for Aerospace Manufacturing and Rework Facilities. This regulation does not apply because the facility is not a major source as defined by 40 CFR 63.2 (40 CFR 63.741(a)).

401 KAR 63:002, Section 2(4)(iiiii) 40 C.F.R. 63.11169 through 63.11180, Table 1 (Subpart HHHHHH), National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources does not apply because paint brushes, rollers, hand wiping, and other non-atomizing application technologies are not included under the definition of "spray-applied activities" (40 CFR 63.11180).

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 does not apply because paint brushes, rollers, hand wiping, and other non-atomizing application technologies are not included under the definition of "spray-applied activities" (40 CFR 63.11522).

Emission Unit #06 Grit Blast Booth				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	20% opacity	401 KAR 59:010, Section 3(1)	N/A	Assumed when venting inside building
	2.34 lb/hr, Process Rate <1,000 lb/hr $3.59P^{0.62}$, Process Rate >1,000 lb/hr up to 60,000 lb/hr P = Process weight in tons	401 KAR 59:010, Section 3(2)	AP-42 Table 13.2.6-1	Integral dust collector, 98.7% C.E., vents inside building.
PM/PM_{10}	Source wide 90 tpy	401 KAR 52:030	AP-42 Table 13.2.6-1	Monthly recordkeeping and emission calculation

Initial Construction Date: Proposed 2024

Process Description:
Blasting using sand-based abrasive media to remove paint from composite parts
Controls: Integral dust collector, 98.7% control efficiency, vents inside building.

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

Comments:
Controls are considered integral to operation of the process.

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
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
90 tpy VOC	To preclude 401 KAR 52:020 and 401 KAR 51:017	Source-wide
90 tpy PM/PM_{10}	To preclude 401 KAR 52:020	Source-wide
0.0218 tpy of 1,6-Hexamethylene Diisocyanate	To comply with 401 KAR 63:020	Source-wide
0.018 tpy of 2,4-Toluene Diisocyanate	To comply with 401 KAR 63:020	Source-wide

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:010, New process operations.	03, 05, 06
401 KAR 63:020, Potentially hazardous matter or toxic substances.	03, 04, 05

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Unit
401 KAR 50:012, Section 1(2), General application	Source-wide
401 KAR 51:017, Prevention of significant deterioration of air quality	

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 SCREEN View on January 4, 2024 of potentially hazardous matter or toxic substances (1,1,2-Trichloroethane, 1,6-Hexamethylene Diisocyanate, 2,4-Toluene Diisocyanate, Cobalt, Cumene, Ethyl Benzene, Manganese, Methyl Isobutyl Ketone, Methyl Methacrylate, N,N-Dimethylaniline, Phenol, Styrene, 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. The Division for Air Quality also performed AERMOD on January 8, 2024 of potentially hazardous matter or toxic substances (1,6-Hexamethylene Diisocyanate and 2,4-Toluene Diisocyanate) 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						

Note: Equipment moved from AI 43580 (F-22-053) to this initial conditional major/syn minor at this new location (AI 180294).

SECTION 6 – PERMIT APPLICATION HISTORY

N/A

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