Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Conditional Major, Operating
PERMIT ID: F-24-031

Toyota Boshoku Kentucky, LLC
1051 Withrow Court
Bardstown, KY 40004

6/26/2024
William Parsons, Reviewer

SOURCE ID:	21-179-00044
AGENCY INTEREST:	3274
ACTIVITY:	APE20240001

Table of Contents

SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 3714 Motor Vehicle Parts and Accessories

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: Nelson
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):

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

*PTE does not include self-imposed emission limitations.

Description of Facility:
The Toyota Boshoku Kentucky manufacturing operation in Bardstown, Kentucky produces trimmed automobile door panels.

SECTION 2 – CURRENT APPLICATION

Permit Number: F-24-031 Activities: APE20240001

Received: January 19, 2024 Application Complete Date(s): May 3, 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:

APE20240001 *Renewal:*
The Division received an application on January 19, 2024 for the renewal of the facility's air quality permit. No further changes were requested. The permit language has been updated to be consistent and clear and incorporate any regulatory changes since the last permit action.

APE20240002 *off-permit/502(b)(10) change:*
The Division received an application on June 11, 2024 to remove Vacuum Formers #1 and #2 from EU01. This request was incorporated into the renewal permit.

F-24-031 Emission Summary		
Pollutant	2023 Actual (tpy)	PTE F-24-031 (tpy)
CO	0.19	9.12
NOx	0.23	15.36
PT	0.38	5.70
PM_{10}	0.38	5.65
$PM_{2.5}$	0.35	5.48
SO_2	0.0018	0.45
VOC	24.82	144.8*
Lead	1.1E-6	4.6E-05
Greenhouse Gases (GHGs)		
Carbon Dioxide	269.8	11361
Methane	0.0052	0.21
Nitrous Oxide	0.0014	0.021
CO_2 Equivalent (CO_2e)	270.3	11373
Hazardous Air Pollutants (HAPs)		
Methanol	1.56	8.73
Combined HAPs:	1.64	10.29

*Note: Emissions limited by federally enforceable emission limitations to ensure the source remains below major source thresholds.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Units #01, 04, 14, 15, & 16 Spray Booths and Emission Unit #03 Substrate Press				
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, 70% Paint/Adhesive PM Transfer Efficiency	Fabric Filter, 90% C.E., Daily Pressure Drop Reading
			EU03, Stack Test Data	EU03 Combined Cyclone 90% C.E. Quarterly Vent Line Cleaning
	< 20% opacity	401 KAR 59:010, Section 3(1)	N/A	Weekly Stack Visual Observation
VOC	90 tpy of VOC emissions	To Preclude 401 KAR 52:020	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 and/or Modification Date:
EU01 SB 3 (3/1991), SB 34 (5/2017)
EU03 (4/1994)
EU04 SB 11 (6/1992), SB 12 (4/1994), SB 32 (2/2015), SB 35 (12/2017)
EU14 SB 27, 28 and 29 (2/2015), SB 36 (9/2018)
EU15 SB 37 (9/2022)
EU16 SB 38, 39 (1/2024)

Process Description:
EU01 Vacuum Formers #3
EU03 Substrate Press #1
EU04 Vacuum Formers #5 and #6
EU14 Lexus Edge / Fold and Ornament
EU15 200/220 D Highlander Process
EU16 Camry Ornament Spray Booths

These emission units are used to make trimmed automobile door panels for automobiles and trucks. The various booths may contain robotic or manual adhesive or paint applicators. A more detailed description of the various activities is listed in the Comments section.

Emission Units #01, 04, 14, 15, & 16 Spray Booths and Emission Unit #03 Substrate Press

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 Requirement
401 KAR 63:020, *Potentially hazardous matter or toxic substances* applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality

Comments:
Substrate Preparation - Door trim requires a solid backing substrate made from a pressed resin-impregnated wood mat or injection molded plastic. The facility has one wood mat substrate press (Substrate Press #1) that uses temperature and pressure to press the wood mats into the shape required.

Vinyl Vacuum Forming - Some substrates require a vinyl layer to be glued to the outside face in the Vacuum Formers. Vacuum Forming is a process of bonding a vinyl layer to the face of the substrate with adhesive. The adhesive is sprayed onto the face of the substrate by robot in a ventilated spray booth. The sprayed substrate is fed into an electric oven that provides the heat necessary to "set" the adhesive. The substrate is then placed into the vacuum forming machine that sucks a piece of vinyl using strong vacuum onto the adhesive-coated substrate. The edges of the vinyl are designed to hangover the edge of the panel and are not attached to the substrate until the next step.

Edge Folding (or sometimes called Edge Crimping) - This is the process of crimping and adhering the overlapped vinyl, which was applied to the front surface of the door panel in the vacuum forming areas, around the back of the panel. Most edge crimping is done today with ultrasonic welders that weld the edge of the vinyl to the back of the substrate. The welding operation is an insignificant activity. Edge crimping can be performed using adhesives as well. In this process, a solvent-based adhesive is sprayed onto the substrate and vinyl edge. The part is placed into an electric oven to "set" the adhesive. Upon removal from the oven, the vinyl is folded by hand around the backside of the door panel to affix the vinyl to the back surface.

Ornament Attachment - This is the process of attaching a decorative fabric or leather ornament to the door panel. A solvent-based adhesive is sprayed onto both the injection molded plastic substrate and the ornament fabric material. The parts are placed under an electric heat lamp to "set" the adhesive. Upon removal from the lamp, the ornament is attached by hand to the ornament substrate.

Toyota Boshoku Kentucky has a bottleneck in its process at the Vacuum Formers. The vacuum former process sprays adhesive onto a substrate in a ventilated spray booth. Then the substrate goes into an electric oven where the adhesive is set. After the oven, the substrate is placed into the vacuum forming machine, which connects a piece of vinyl to the substrate. This cycle time takes 52 seconds with the application of the adhesive a small part of that cycle. The cycle time provides constraints on the number of parts that can be produced, limiting the number of items that can be coated.

The emissions from adhesive and paint coating are calculated using mass balances. A transfer efficiency of 70% is assumed for calculating PM/PM_{10} emissions. A particulate matter control efficiency of 90% is assumed for the spray booth filters.

Emission Units #01, 04, 14, 15, & 16 Spray Booths and Emission Unit #03 Substrate Press

Emissions from EP03 are estimated using stack test data from a similar facility in New Westminster, B.C. In addition, Toyota Boshoku has performed a formaldehyde emission stack test at the Bardstown facility in order to demonstrate compliance with 401 KAR 63:020.

40 CFR 63 Subpart DDDD, National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products, does not apply to the substrate press because Toyota Boshoku is not a major source of HAP emissions.

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 Toyota Boshoku does not use target HAP in their coatings.

Emission Unit #11 Back-Up Emergency Generator

Initial Construction and/or Modification Date: 1991

Process Description:
Caterpillar Diesel Fuel-Fired Standby Power Generator Set – Model 3516
Horsepower: 2167
BTU input: 5.5 MM BTU/hour
Power Output: 1500 kW
Construction date: 1991

Applicable Regulation:
401 KAR 63:002 Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* applies to stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand

Comments:
Emission factors for diesel emissions were taken from AP-42 chapter 3.3. For diesel, 7.1 lbs/gallon density and 0.0193 MMBtu/lb heating value were assumed.

Insignificant Activity #2 Spray Nozzle Cleaning

Comments:
Insignificant activity #2 refers to a closed cleaning vessel with recirculation. The cleaning solution is treated by outside contractor.

Insignificant Activity #4 Hot Knife Cutting Area

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.

Insignificant Activity #4 Hot Knife Cutting Area

Comments:
Fabric cut with electrically powered hot wire. As of June 2009, the hot knife cutting area is no longer in use, but it will remain in the facility for possible orders of service parts.

Insignificant Activity #7 Pellet Unloading

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.

Comments:
Transfer of polypropylene pellets from trucks to storage and from storage to the injection molding machines (including drying). There are four storage silos.

Insignificant Activity #9 Injection Molding Die Maintenance

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.

Comments:
A carbon electrode is used to burn holes in metal dies.

Insignificant Activity #10 Assembly Stations

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.

Comments:
Hot air and ultrasonic welding methods are used to bond polypropylene parts together (Camry & Solara Lines). These units are not vented outside.

Insignificant Activity #11 Camry Leather Ornament Cleanup

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.

Comments:
Operators use soldering irons to occasionally repair polypropylene backing plates manually on the Camry Ornament line. A puff of nuisance smoke is sometimes generated while a piece is worked on. This insignificant emission is ducted away from the operator for personal hygiene reasons and discharges outside

Insignificant Activity #11 Camry Leather Ornament Cleanup
the building. As of June 2009, the Camry leather ornament cleanup activity is no longer in use, but the equipment will remain in the facility for possible orders of service parts.

Insignificant Activity #13 Cutting Department Oven
Comments: An electric oven is used to warm vinyl sheet material to remove curl. This oven is not vented outside. As of June 2009, the cutting department oven is no longer in use, but the oven will remain in the facility for possible orders of service parts.

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 Compliance Testing
EU03 Substrate Presses 1 and 2	N/A	Formaldehyde	401 KAR 63:020	Initial	EPA Methods 1-4, 316	N/A	3.15 E-4 lbs/mat (0.074 lb/hr formaldehyde ÷ 235 mat/hr)	235 mats/hr (average mat pieces production)	CMN20040001	1/15/2004

Footnotes:

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
90 tpy of VOC emissions	To preclude major source status for VOC	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

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:010,*New process operations.*	#01, #03, #04, #14, #15, #16
401 KAR 63:002 Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*	#11
401 KAR 63:020, *Potentially hazardous matter or toxic substances.*	#01, #03, #04, #14, #15, #16

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 AERMOD on October 26, 2018 of potentially hazardous matter or toxic substances (Naphthalene) 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 SCREEN View on January 25, 2024 of potentially hazardous matter or toxic substances (Diethylene Glycol Monobutyl Ether, Ethyl Acetate, Ethyl Benzene, Formaldehyde, N-Hexane, Methanol, Methyl Ethyl Ketone, Phenol, Toluene, Vinyl Acetate, Xylenes, Naphtha, Cyclohexane, Heptane) 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-03-020	Initial Issuance	55807	7/7/2003	6/2/2004	Initial Permit	N/A
F-03-020 R1	Minor revision	APE20040002	11/14/2004	11/30/2004	Replacement of 3 Existing Spray Booths and Ovens	N/A
F-03-020 R1	Minor revision	APE20050002	1/4/2006	1/17/2006	Addition of New Vacuum Former at EP01, Deletion of EP02	N/A
F-09-018	Renewal	APE20090001	6/1/2009	7/21/2009	Renewal Operating Permit	N/A
F-09-018 R1	Minor Revision	APE20100002	11/9/2010	12/3/2010	Addition of Camry Ornament Adhesive Line EP12	N/A
F-09-018 R2	Minor Revision	APE20120001	2/29/2012	4/5/2012	Name Change, and Removal and Addition of Emission Points	N/A
F-14-009	Renewal	APE20140001	2/19/2014	7/18/2014	Renewal Operating Permit	N/A
F-14-009 R1	Minor Revision	APE20150001	1/16/2015	3/13/2015	Addition of Lexus ES Process Line	N/A
F-14-009 R2	Minor Revision	APE20170001	3/9/2017	4/30/2017	Addition of Spray Booth and Oven to EP13	N/A
F-19-011	Renewal	APE20190001	2/28/2019	8/18/2019	Renewal Permit	N/A

F-19-011 R1	Minor Revision	APE20230001	11/28/2023	3/11/2024	Addition of EU16 Camry Ornament Process	N/A

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
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
SB – Spray Booth
SO_2 – Sulfur Dioxide
TF – Total Fluoride (Particulate & Gaseous)
VOC – Volatile Organic Compounds
MMBtu/hr – million BTU per hour