

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

Conditional Major, Operating  
PERMIT ID: F-23-041  
Kellanova USA LLC (Pikeville Bakery)  
3321 State Highway 194 E, Kimper, KY 41539  
October 20, 2023  
Ossama Ateyeh, Reviewer  
Source ID: 21-195-00234  
Agency Interest #: 3673  
Activity ID: APE20230002

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## SECTION 1 - SOURCE DESCRIPTION

SIC Code and description: 2051, Bread and Other Bakery Products, Except Cookies and Crackers.

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: 0

County: Pike

Nonattainment Area  N/A  PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  Ozone  Lead

PTE\* greater than 100 tpy for any criteria air pollutant  Yes  No

If yes, for what pollutant(s)?

PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  VOC

PTE\* greater than 250 tpy for any criteria air pollutant  Yes  No

If yes, for what pollutant(s)?

PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  VOC

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

PTE\* greater than 25 tpy for combined HAP  Yes  No

\*PTE does not include self-imposed emission limitations.

### Description of Facility:

Kellanova USA, LLC manufacturing facility is located in Kimper, Kentucky. The Pikeville plant operates a baked goods for human consumption manufacturing facility. The various types of baked goods are processed through one of three direct-fired ovens. The facility also has a wastewater digester with non-assisted flare.

**SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM**

Permit Number: F-23-041

Activity: APE20230002

Application Received: 7/26/2023

Application Complete: 10/10/2023

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:** This is a renewal permit application that includes the following changes.

- Addition of one natural gas-fired indirect heat exchanger with an input capacity of 0.85 MMBtu/hr to the list of insignificant activities, which was submitted as an off-permit notification April 18, 2019 (APE20190001).
- Replacement of two indirect heat exchangers, each with a capacity less than 1 MMBtu/hr, with two new indirect heat exchangers, each having a heat input capacity of 1.85 MMBtu/hr. These units are added to Section B as Emission Units 08 and 09. This application was submitted as an off-permit notification June 3, 2022 (APE20220001). These units were later identified as 2 MMBtu/hr each during the renewal process.
- Updates to Insignificant Activities list.
- Name/ownership change.

F-23-041 Emission Summary		
Pollutant	2022 Actual (tpy)	PTE F-23-041 (tpy)
CO	3.4	17.09
NOx	4.12	17.11
PT	0.31	1.24
PM <sub>10</sub>	0.31	0.93
PM <sub>2.5</sub>	0.31	0.31
SO <sub>2</sub>	0.024	0.10
VOC	52.18	304.32*
Lead	0.0000009	0.000082
Greenhouse Gases (GHGs)		
Carbon Dioxide	4,951	21,013
Methane	0.094	0.45
Nitrous Oxide	0.090	0.37
CO <sub>2</sub> Equivalent (CO <sub>2</sub> e)	4,980	21,137
Hazardous Air Pollutants (HAPs)		
Combined HAPs:	0.00	0.37

\*Limited to 90 tpy. See **Table A of Section 4 – Source Information and Requirements**

**SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS**

<b>Emission Unit #EU01, EU02, and EU05 Direct-Fired Ovens</b>				
<b>Pollutant</b>	<b>Emission Limit or Standard</b>	<b>Regulatory Basis for Emission Limit or Standard</b>	<b>Emission Factor Used and Basis</b>	<b>Compliance Method</b>
PM	[3.59(P) <sup>0.62</sup> ] pounds per hour, where P is the processing rate in tons per hour. If P ≤ 0.5 tons/hr, the emission limit is 2.34 lbs/hr.	401 KAR 59:010, Section 3(2)	7.6 lb/MMscf AP-42 1.4-2	Compliance assumed
	20% opacity	401 KAR 59:010, Section 3(1)		
VOC	Shall not exceed 90 tons per year based on a consecutive twelve month rolling total	401 KAR 52:030, Section 10	5.5 lb/MMscf AP-42 1.4-2 and material balance	The permittee shall maintain records the amount (lbs) of each VOC containing flavor used and the percent VOC content of each chemical on a monthly basis

**Initial Construction Date:** 1990

**Process Description:**

<b>Description:</b>	<b>EU01</b>	<b>EU02</b>	<b>EU05</b>
Unit Model:	Werner Lehara	Werner Lehara	Custom
Process Substance:	Baked goods for human consumption: Bread, Cakes, and Related Products		
Fuel Input:	10.4 MMBtu/hr	10.4 MMBtu/hr	11.8224 MMBtu/hr
Primary Fuel:	Natural Gas	Natural Gas	Natural Gas

**Applicable Regulation:**

**401 KAR 59:010**, *New process operations*, applicable to each affected facility or source, associated with a process operation, which is not subject to another emission standard and commenced after July 2, 1975.

**State Origin Requirements:**

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

**Comments:**

1. Flavor Usage Rate (lb/hr) = (Maximum Production Rate, lb/hr) \* (Flavor Added, % of Finished Product) / 100

2. Potential VOC Emissions per Flavor (lb/hr) = (Flavor Usage Rate, lbs/hr) \* (Effective VOC Content, %) / 100

**Emission Unit #EU01, EU02, and EU05 Direct-Fired Ovens**

3. Potential VOC Emissions per Product (lb/hr) = sum of Potential VOC Emissions (lb/hr) for all flavors in product

4. PTE-controlling product is bolded and highlighted in yellow. Each line can manufacture only one product at a time.

5. Potential Flavor VOC emissions from each oven if the maximum VOC-emitting product from each line were produced on a continuous basis. PTE-controlling product is bolded and highlighted.

6. Uncontrolled VOC PTE of each oven exceeds 90 tpy facility-wide limit.

7. Propylene Glycol (PG) is considered to have an emittance rate of 20% based on stack testing performed at the Pikeville plant on October 13, 2009.

8. Facility has adopted a 90 tpy limit on VOC emissions in compliance with Conditional Major Source Operating Permit No. F-09-001-R2 Condition 3 of Section D. The potential of VOC emissions was calculated on mass balance basis from the use of flavoring at the Pikeville plant

sum of potential VOC Emissions (lb/hr) for all flavors in product / Hourly design rate \* 20% ( It is assumed that 80% of the PG is retained in the finished product and only 20% is actually emitted during baking). All other VOC fractions, however, were assumed 100% emitted during baking.

Flavor Usage Rate = Given by the facility (Total) [Recordkeeping Information]

Flavor Usage Rate (lb/hr) = Maximum Product Rate lb/hr \* (Flavor Added, % of finished Product)/100

Emission Factor = Potential VOC Emissions per Flavor (lb/hr) / Hourly design rate given \* 20% PG

PTE calculations for the natural gas combustion utilize emission factors from AP-42, Chapter 1.4.

Emission Unit #EU06 Cleaning and Sanitizing Process				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
VOC	Shall not exceed 90 tons per year based on a consecutive twelve month rolling total	401 KAR 52:030, Section 10	2,000 lb/ton mass balance	The permittee shall maintain records of the amount (lb) of each VOC containing cleaner and sanitizing chemical used and the percent VOC content of each chemical on a monthly basis
<p><b>Initial Construction Date:</b> added to permit in 2010</p> <p><b>Process Description:</b>                      Various chemical supplies used for cleaning and sanitizing processes.</p> <p><b>Applicable Regulation:</b>  <b>401 KAR 63:010</b>, <i>Fugitive emissions</i>, applies to any apparatus, operation, or road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard.</p> <p><b>State Origin Requirements:</b>  <b>401 KAR 63:020</b>, <i>Potentially hazardous matter or toxic substances</i>. This regulation is applicable to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to provisions of an administrative regulation of the Division for Air Quality</p> <p><b>Comments:</b></p> <ol style="list-style-type: none"> <li>1. Data Sheet determined from SDS</li> <li>2. Density of ink, lb/gal = (Specific gravity of ink) * (Density of water, lb/gal)                      Density of water 8.32 lb/gal</li> <li>3. VOC content, lb/gal = (%VOC by weight) * (Density of Ink, lb/gal)</li> <li>4. Ink usage based on combination of historical data and sum of average purchases from 2018-2022 for each color</li> <li>5. VOC emissions, lb/yr = (Ink usage, gal/yr) * (VOC content, lb/gal)</li> <li>6. VOC PTE, tpy = (VOC emissions, lb/yr) / (2000 lb/ton)</li> <li>7. Actual emissions are used to conservatively estimate potential emissions, as the usage basis and the VOC % basis for the Fujifilm ink are conservative.</li> </ol>				

Emission Unit EU07, EU08 & EU09 Indirect Heat Exchanger				
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)	7.6 lb/MMscf AP-42 1.4-2	These units are assumed to be in compliance while combusting natural gas
	20% opacity	401 KAR 59:015, Section 4(2)		
SO <sub>2</sub>	3.0 lb/MMBtu	401 KAR 59:015, Section 5(1)(a)1.	0.6 lb/MMscf AP-42 1.4-2	

**Process Description:**

	EU07	EU08	EU09
<b>Model</b>	Lochnivar CFN1442PM	Fulton Heating Solution, EDR-2000	Fulton Heating Solution, EDR-2000
<b>Initial Construction</b>	6/1/1990	6/1/2022	6/1/2022
<b>Rated Capacity MMBtu/hr</b>	1.44	2.0	2.0
<b>Fuel</b>	Natural Gas	Natural Gas	Natural Gas

**Applicable Regulation:**

**401 KAR 59:015**, *New indirect heat exchangers*, applicable to each indirect heat exchanger having a heat input capacity greater than 1 MMBtu/hr commenced on or after April 9, 1972.

**State Origin Requirements:**

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

**Comments:**

Applicant verified that EU08 and EU09 each have 2.0 MMBtu/hr heat input during the renewal process.

Emission Unit EU10 – Bio-Gas Flare				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
Opacity	No more than 20% opacity for 3 minutes in 1 day	401 KAR 63:015, Section 3	5.31 Calculated from actual data.	Monthly visual observation and if visible emissions observed, perform a U.S. EPA Reference Method 9 test
<p><b>Initial Construction Date:</b> 2008</p> <p><b>Process Description:</b>                      Wastewater digester with non-assisted flare flow rate 65.4 acfm, heat value 625 Btu/scf with natural gas pilot 0.1 MMBtu/hr                      Rated Capacity: 2.45 MMBtu/hr</p> <p><b>Applicable Regulation:</b>  <b>401 KAR 63:015, Flares</b>, applicable to each flare (device at the tip of a stack or other opening used for the disposal of waste gas streams by combustion).   <b>401 KAR 53:010, Ambient air quality standards</b></p> <p><b>Comments:</b>                      CO, NO<sub>x</sub>, and VOC emission factors are from AP-42 Chapter 13.5 for Industrial Flares. Greenhouse gas emission factors are from 40 CFR 98, Subpart C.</p> <p>Ideal Gas Law <math>PV = nRT</math></p> <p>H<sub>2</sub>S Emissions (lb/hr) = <math>PV/RT</math> ;  <math>[34.08 \text{ lb/lb-mol} * (14.7 \text{ psia}) * 10^5 \text{ ft}^3/\text{hr} * (600 \text{ ppm}/1\text{E}6)] / (10.73 \text{ psia-ft}^3/\text{lbmol-R}) * (528 \text{ R})</math>                      = 5.31 lb/hr  <math>(5.31 \text{ lb/hr} * 8760 \text{ hr/yr}) / 2000 \text{ lb/ton} = 23.24</math>  <math>23.4 * (1 - .98) = 0.46 \text{ tpy}</math>                      Flare Control Efficiency assumed greater than or equal to 98% Included in the calculation</p> <p>Emissions from the natural gas pilot are calculated using AP-42, Chapter 1.4 for natural gas combustion.</p>				



**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
EU02: Stack #1	None	PG*	Voluntary Limit to preclude 401 KAR 52:020	Initial	Method 308/18	90 tpy	0.058 lb/hr	20.2 lb/hr	CMN20090002	10/13/2009
		Ethanol				90 tpy	0.26 lb/hr	7.3 lb/hr		
EU02: Stack #2	None	PG*	Voluntary Limit to preclude 401 KAR 52:020	Initial	Method 308/18	90 tpy	0.0023 lb/hr	20.2 lb/hr		
		Ethanol				90 tpy	0.0009 lb/hr	7.3 lb/hr		
EU 02: Stack #3	None	PG*	Voluntary Limit to preclude 401 KAR 52:020	Initial	Method 308/18	90 tpy	0.178 lb/hr	20.2 lb/hr		
		Ethanol				90 tpy	0.484 lb/hr	7.3 lb/hr		
EU 02: Stack #4	None	PG*	Voluntary Limit to preclude 401 KAR 52:020	Initial	Method 308/18	90 tpy	0.605 lb/hr	20.2 lb/hr		
		Ethanol				90 tpy	0.363 lb/hr	7.3 lb/hr		

EU 02: Stack #5	None	PG*	Voluntary Limit to preclude 401 KAR 52:020	Initial	Method 308/18	90 tpy	0.318 lb/hr	20.2 lb/hr		
		Ethanol				90 tpy	0.238 lb/hr	7.3 lb/hr		
EU 02: Stack #6	None	PG*	Voluntary Limit to preclude 401 KAR 52:020	Initial	Method 308/18	90 tpy	0.0016 lb/hr	20.2 lb/hr		
		Ethanol				90 tpy	0.0012 lb/hr	7.3 lb/hr		

\*PG is Propylene Glycol

**SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS**

**Table A - Group Requirements:**

<b>Emission and Operating Limit</b>	<b>Regulation</b>	<b>Emission Unit</b>
90 tpy of VOC emissions	401 KAR 52:030, <i>Federally-enforceable permits for nonmajor sources; taken to preclude 401 KAR 52:020 and 401 KAR 51:017</i>	Source-wide

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

<b>Regulation</b>	<b>Basis of Determination</b>	<b>Emission Unit</b>
401 KAR 59:010	<i>New process operations</i>	EU01, 02, & 05
401 KAR 59:015	<i>New indirect heat exchangers</i>	EU07, 08, 09
401 KAR 63:010	<i>Fugitive emissions</i>	EU 06
401 KAR 63:015	<i>Flares</i>	EU10
401 KAR 63:020	<i>Potentially hazardous matter or toxic substances</i>	EU01, 02, 05, 06, 07, 08, & 09

**Air Toxic Analysis**

**401 KAR 63:020, *Potentially hazardous matter or toxic substances***

The Division for Air Quality has performed emissions screening on August 24, 2018 of potentially hazardous matter or toxic substances 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**

<b>Permit</b>	<b>Permit Type</b>	<b>Activity#</b>	<b>Complete Date</b>	<b>Issuance Date</b>	<b>Summary of Action</b>
F-09-001	Initial	APE20080002	11/18/2008	3/18/2019	Initial Conditional Major Operating Permit
F-13-045	Renewal	APE20130002	11/3/2013	1/7/2014	Permit Renewal
F-18-040	Renewal	APE20180002	8/24/2018	1/26/2019	Permit Renewal

## **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 <sub>x</sub>	– Nitrogen Oxides
NSR	– New Source Review
PG	– Propylene Glycol
PM	– Particulate Matter
PM <sub>10</sub>	– Particulate Matter equal to or smaller than 10 micrometers
PM <sub>2.5</sub>	– Particulate Matter equal to or smaller than 2.5 micrometers
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
SO <sub>2</sub>	– Sulfur Dioxide
TF	– Total Fluoride (Particulate & Gaseous)
VOC	– Volatile Organic Compounds