Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Conditional Major, Operating
Permit: F-24-064
Canton Wood Products Company, LLC
365 South Woodlawn Avenue
Lebanon, Kentucky 40033
November 18, 2024
Michael Baidy, Reviewer

SOURCE ID:	21-155-00035
AGENCY INTEREST:	46439
ACTIVITY:	APE20240001

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 2449, Wood Containers, NEC

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: Marion
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:
Canton Wood Products Company, LLC manufactures white oak barrels and toasted oak chips for the wine industry. Raw materials are stored on site for up to 4 years to season the wood. Wood used for barrels is later kiln dried to reduce the moisture content, sized by various machines, pre-assembled, heated, assembled, and toasted based on customer specifications. Oak chips are toasted, sized, and bagged.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: F-24-064 Activity: APE20240001

Application Received: October 7, 2024 Application Complete Date(s): December 4, 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:
Canton Wood Products Company submitted a permit renewal application on October 7, 2024. Canton Wood Products requested a permit renewal with no changes.

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F-24-064 Emission Summary		
Pollutant	2023 Actual (tpy)	PTE F-24-064 (tpy)
CO	3.76	141.76*
NOx	1.19	21.48
PT	1.58	23.68
PM_{10}	9.37E-01	15.96
$PM_{2.5}$	5.52E-01	7.14
SO_2	5.60E-02	1.13
VOC	2.23	107.37*
Lead	N/A	1.82E-03
Greenhouse Gases (GHGs)		
Carbon Dioxide	617.93	11,092
Methane	6.95E-02	8.33E-01
Nitrous Oxide	4.69E-02	6.69E-01
CO_2 Equivalent (CO_2e)	633.66	11,312
Hazardous Air Pollutants (HAPs)		
Benzene	N/A	1.58E-01
Formaldehyde	N/A	1.67E-01
Hydrochloric Acid	N/A	7.17E-01
Potassium	N/A	1.47
Combined HAPs:	N/A	3.11

* The source has taken federally enforceable limits to keep emissions of VOC and CO to less than 90 tpy each.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit #02 (EP2) Cooperage Operations (Barrel Manufacturing) Emission Unit #05 (EP5) Chip Manufacturing Operations				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	$P \leq 0.5$ ton/hr $E = 2.34$ lb/hr $0.5 < P \leq 30$ $E = 3.59 \times P^{0.62}$	401 KAR 59:010, Section 3(2)	6.003 lbs/ton: Engineering Estimation*	Control device shall be on while system is operating
	20% Opacity	401 KAR 59:010, Section 3(1)(a)	N/A	Weekly qualitative visual observations and U.S. EPA Reference Method 9 readings

Construction Date: Listed by emission point:
EU02 – 7/2001
EU05 – 7/2004

Process Description:
EU02: Various machines size the stave blanks for barrel assembly.
Maximum Capacity: 1.08 tons/hr
Control Device: Steel Craft Corp HE-1 Cyclone Size 90 with 85% efficiency
EU05: The chips are manufactured from oak cores, a byproduct from the saw mill.
Maximum Capacity: 2.28 tons/hr
Control Device: Cyclone with 80% efficiency

Applicable Regulation:
401 KAR 59:010, *New process operations*, 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:
EU02: The original application received by the Division on November 6, 2003 (APE20030002) specifies an hourly operating rate of 539.25 bf/hr and emission factors of 6.003 lb/ton and 3.176 lb/ton for PM and PM_{10}, respectively. It is known that the density of white oak is 48 lb/ft^3 (AP-42 Appendix A) and 1bf = 0.0833 ft^3, so the following equation was used to calculate the hourly design rate:

$$\frac{539.25\frac{bf}{hr} * 0.0833\frac{ft^3}{bf} * 48\frac{lb}{ft^3}}{2000\frac{lb}{ton}} = 1.08\frac{tons}{hr}$$

*Emission factors extracted from KYEIS for operations with similar processes or activities (APE20060004 Application Form DEP7007N).

Emission Unit #04 (EP4) Barrel Toasting Operations				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
VOC	Source-wide 90 tpy	To preclude 401 KAR 52:020	229 lb/ton (AP 42 Table 1.9-1)	Monitor and maintain records of the amount of wood combusted on a monthly basis.
CO			252.6 lb/ton (AP 42 Table 1.9-1)	
PM	P ≤ 0.5 ton/hr E = 2.34 lb/hr	401 KAR 59:010, Section 3(2)	13.56 lbs/ton (CMN20040001^)	Assumed based on emission factor.
	20% Opacity	401 KAR 59:010, Section 3(1)(a)	N/A	Monitor and maintain records of weekly qualitative visual observation; U.S. EPA Reference Method 9 if visible emissions seen.

Construction Date: 1976

Process Description:
After assembly, the barrels are toasted with small pots containing wood waste that's burned at a constant rate of 15.2 lbs/hr/barrel (13 barrels/hr max). A large hood is located over the heating area to release smoke from the building; however, there is no control device in place.

Applicable Regulation:
401 KAR 59:010, *New process operations*, 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:
^PM Potential emissions calculation based on source testing conducted by Kenvirons.

AP-42 emission factors for residential fireplaces have been used to determine PTE.

Compliance with the applicable 401 KAR 59:010 PM standard is assumed based on the emission factor established from a performance test (CMN20040001).

F-14-012 erroneously included a cyclone with an 80% efficiency. The 2014 renewal application specifically states that there is no control device.

Emission Unit #06 (EP7) Haul Roads and Yard Area
Construction Date: 1967 **Process Description:** One main haul road and several small yard areas maintained by the facility. **Applicable Regulation:** **401 KAR 63:010**, *Fugitive Emissions*, is applicable to each affected facility (road) that emits or could emit fugitive emissions not elsewhere subject to an opacity standard within 401 KAR Chapters 50 through 68. **Comments:** Emission factors provided by the facility on the initial conditional major application (APE20040001).

Emission Unit #07 (EP3) Natural Gas-Fired Boiler for Barrel Formation & Dry Kiln Operations				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
VOC	Source-wide 90 tpy	To preclude 401 KAR 52:020	5.5 lb/MMscf (AP 42 Table 1.4-2)	Monitor and maintain records of the amount of NG combusted on a monthly basis.
CO			84 lb/MMscf (AP 42 Table 1.4-1)	
PM	0.75 lb/MMBtu	401 KAR 61:015, Section 4(1)(a)	7.6 lb/MMscf (AP 42 Table 1.4-2)	Assumed while combusting NG.
	40% opacity	401 KAR 61:015, Section 4(1)(c)	N/A	
SO_2	6.0 lb/MMBtu based on a 24 hour average	401 KAR 61:015, Section 5(1)	0.6 lb/MMscf (AP 42 Table 1.4-2)	

Construction Date: 1967

Process Description:
The 4.2 MMBtu/hr Power Master 125 hp Model 3G S/N 6712542 indirect heat exchanger is a back-up unit that provides process heat for 2 drying kilns and a steam tunnel when EP9 is unavailable.

Applicable Regulation:
401 KAR 61:015, *Existing indirect heat exchangers*, is applicable to each indirect heat exchanger having a heat input capacity of more than one (1) MMBtu/hr commenced before April 9, 1972.

Comments: N/A

Emission Unit #08 (EP9) Wood Gasification Boiler				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
VOC	Source-wide 90 tpy	To preclude 401 KAR 52:020	0.017 lb/ton (AP 42 Table 1.6-3)	Monitor and maintain records of the amount of wood combusted on a monthly basis.
CO			6.24 lb/ton (AP 42 Table 1.6-2)	
PM	0.56 lb/MMBtu	401 KAR 59:015, Section 4(1)(a)	4.16 lb/ton (AP 42 Table 1.6-1)	Assumed while cyclone is in operation.
	20% opacity	401 KAR 59:015, Section 4(2)		Weekly qualitative visual observations.
SO_2	5.0 lbs/MMBtu	401 KAR 59:015, Section 5(1)(c)3.a.	0.26 lb/ton (AP 42 Table 1.6-2)	Assumed while combusting wood.

Construction Date: 3/2006

Process Description:
The 3.3 MMBtu/hr Superior Boiler Works Model CKI 15-500-80-8 indirect heat exchanger is used to provide steam to the plant and utilizes flyash re-injection to maintain temperature. A cyclone controls the release of PM with a control efficiency of 98.4%.

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

401 KAR 63:002. Section 2(4)(jjjjj), 40 C.F.R. 63.11193 through 63.11237, Tables 1 through 8 (**Subpart JJJJJJ)**, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, as published July 1, 2016,* is applicable to industrial boilers located at an area source of HAPs.

Comments:
AP-42 emission factors for dry wood-fired boilers have been used to determine PTE.

There are no pollutant specific NSPS requirements.

Total Heat Input Capacity for All Affected Facilities at the Source = 7.5 MMBtu/hr (See Appendix B)

Emission Unit 09 (EP13) Deihl In-Line Rip Saw				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	$P \leq 0.5$ ton/hr $E = 2.34$ lb/hr $0.5 < P \leq 30$ $E = 3.59 \times P^{0.62}$	401 KAR 59:010, Section 3(2)	8.704 lb/ton (Engineering Estimation)	Control device shall be maintained.
	20% Opacity	401 KAR 59:010, Section 3(1)(a)	N/A	Weekly visual observations.

Construction Date: 7/2001

Process Description:
Staves are inspected for quality of edges and appropriate length; the saw is used to fix any flaws.
Maximum capacity: 0.59 tons/hr
Control Device: Fabric Bag Dust Control System (2012) with a 96.8% efficiency

Applicable Regulation:
401 KAR 59:010, *New process operations*, 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:
The facility provided an emission factor of 0.004352 lb/SCC, noting an SCC unit of lbs (APE20120002).

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
04	None	PM lbs/ton processed	Voluntary to increase operational limit	N/A	Method 5	2.34 lbs/hr	0.6 lbs/hr	Wood Fuel Usage Rate of 88.3 lbs/hr	CMN20040001	5/11/2004

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
90 tpy of CO emissions	401 KAR 52:030, *Federally-enforceable permits for nonmajor sources*	Source-wide

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:010, *New process operations*	EU 02, 04, 05, & 09
401 KAR 63:010, *Fugitive emissions*	EU 06
401 KAR 61:015, *Existing indirect heat exchangers*	EU 07
401 KAR 59:015, *New indirect heat exchangers*	EU 08
401 KAR 63:002. Section 2(4)(jjjjj), 40 C.F.R. 63.11193 through 63.11237, Tables 1 through 8 (Subpart JJJJJJ), *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*	EU 08

Table C - Summary of Precluded Regulations:

N/A

Table D - Summary of Non Applicable Regulations:

N/A

Air Toxic Analysis

N/A

Single Source Determination

N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
S-03-131	Initial	APE20030002	12/15/2003	12/24/2003	Initial Construction Permit	N/A
F-04-023	Initial	APE20040001	6/15/2004	9/15/2004	Initial Conditional Major	N/A
F-04-023 R1	Minor Revision	APE20060004	6/29/2006	7/29/2006	Added a wood waste boiler (EP8 & EP9); Increase EP5 usage rate	N/A
F-04-023 R2	Minor Revision	APE20070001	8/24/2007	8/31/2007	Add and remove insignificant activities	N/A
F-09-010	Renewal	APE20090001	5/7/2009	8/5/2009	Name Change	N/A
F-09-010 R1	Minor Revision	APE20120002	10/12/2012	12/7/2012	Saw Relocation (EP13)	N/A
F-14-012	Renewal	APE20140001	3/20/2014	1/13/2015	Renewal	N/A
F-19-023	Renewal	APE20190001	5/29/2019	4/24/2020	Renewal	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

APPENDIX B – INDIRECT HEAT EXCHANGER EMISSION LIMITATIONS

EU	Fuel(s)	Capacity (MMBtu/hr)	Constructed	Removed	Basis for PM Limit	Total Heat Input Capacity for PM Limit (MMBtu/hr)	PM Limit (lb/MMBtu)	Basis for SO_2 Limit	Total Heat Input Capacity for SO_2 Limit (MMBtu/hr)	SO_2 Limit (lb/MMBtu)
07 (EP3)	Natural Gas	4.2	1967	N/A	401 KAR 61:015, Section 4(1)(a)	4.2	0.75	401 KAR 61:015, Section 5(1)	4.2	6.0
08 (EP9)	Wood	3.3	2006	N/A	401 KAR 59:015, Section 4(1)(a)	7.5	0.56	401 KAR 59:015, Section 5(1)(c)3.a.	7.5	5.0