



<b>Company Name:</b>	Carolina Shavings Inc	<b>Permit Writer:</b>	Breanna Lindler
<b>Agency Air Number:</b>	1520-0107	<b>Date:</b>	February 12, 2025
<b>Permit Number:</b>	OP-1520-0107 v2.0		

**DATE APPLICATION RECEIVED:** June 02, 2021  
**DATE OF LAST INSPECTION:** September 4, 2024  
 The facility has not been in operation since 2017.

**PROJECT DESCRIPTION**

The facility has submitted a request to renew the existing State Operating Permit. In addition, the facility submitted a transfer of ownership in June of 2017. However, due to consent order 15-047-A and administrative order 17-0044-A, the transfer was put on hold until such time as the deliverables of the orders were met. In June of 2021, the new prospective owners submitted an updated operating permit renewal request prior to the permit's expiration date of August 31, 2021. The renewal process was also put on hold until the new prospective owners completed the items outlined in the previously mentioned consent and administrative orders.

Transfer of Ownership request received on June 22, 2017, will be incorporated with this permit issuance.

Following a meeting on Monday, December 18, 2023, the facility updated the Department on the progress they have made and the additional information that was needed to begin the renewal process. As of January 9, 2023, the facility has submitted all requested information, and the renewal is being processed.

Based on the past compliance issues, the facility will not be issued a lifetime operating permit.

**FACILITY DESCRIPTION**

SIC CODE: 2421 – Sawmills and Planing Mills, General  
 NAICS CODE: 321113 - Sawmills

Carolina Shavings Inc. is located in Clinton, South Carolina and produces dried pine shavings. The facility will shave green lumber and pass these shavings through the triple-pass rotary drum dryer. Following the dryer, the dried wood shavings are transferred, via a Cyclone, to a second screening operation, where the larger shavings are pneumatically transferred to tractor trailers for distribution and the smaller material is transferred to the waste storage fuel bin to supply fuel to the dryer.

The Cyclone used to transfer the materials to the second screening operation is considered inherent to the process. The primary purpose of this equipment is to transfer the dried material, not air pollution control, and this equipment would be installed regardless of applicable air quality regulations. As such, the cyclone is a permitted piece of equipment, and not listed as a control device for any operations on site.

**CHANGES SINCE LAST OP ISSUANCE**

The facility has updated the Pneumatic Transfer to Fuel Bin source with a fully enclosed auger system that will eliminate the particulate emissions from the existing Stack 2, as a result this equipment will be VOIDED with this renewal as the new source does not have any potential emissions and is exempt from permitting requirements.



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**VOID EQUIPMENT**

The following emission units/equipment have been deemed VOID and will be removed from the current operating permit. A comprehensive record of voided equipment for the site can be found in ePermitting under Program Components.

Emission Unit ID	EU Description	Equipment ID	Equipment Description	Reason for VOID Status	Date Removed
01	Wood Shaving and Drying Process (only one piece of equipment)	Bin 1	Pneumatic Transfer to Fuel Bin	Equipment has been replaced with an enclosed mechanical system	05/31/2021

**EMISSIONS**

**Dryer Emission Calculations**

Facility and Dryer Information used in emission calculations from the burner manufacturer and the facility:

- Burner Size: 20 MMBtu/hr
- Process Weight Rate: 24.695 tons per hour
- Green Wood Moisture Content: 50%
- Dry Wood Moisture Content: 12%

To calculate potential emissions from the Dryer, the facility utilizes emission factors from AP-42, Chapter 10.6.2. For these calculations it is assumed that PM<sub>10</sub> is equivalent to PM<sub>2.5</sub>.

To calculate the Dryer Rating in Oven Dried Tons per hour the facility used the following calculation. For these calculations it is assumed that PM<sub>10</sub> is equivalent to PM<sub>2.5</sub>.

$$\begin{aligned} \text{Dry Weight (Oven Dried Tons/hr)} &= \text{Process Weight Rate (Tons/hr)} \times (1 - \text{Green Wood Moisture Content}) \\ &= 12.35 \text{ (Oven Dried Tons/hr)} \end{aligned}$$

**Green Shavers and Screening**

Process Weight Rate: 24.695 tons per hour

Wood Waste from the Shavers: 0.10%

The facility uses the North Carolina Department of Environmental Quality's Woodworking Spreadsheet for Particulate Matter emissions. The emission factor used to calculate Particulate Matter is 0.0056 pounds of PM per pounds of wood waste. lbs

$$\begin{aligned} \text{Wood Waste Rate (lbs of wood waste/hr)} \\ &= \text{Process Weight Rate (tons/hr)} \times \text{Wood Waste from Shavers (\%)} \times 2,000 \text{ (lbs/ton)} \end{aligned}$$

$$\begin{aligned} \text{Emission Rate (lb/hr)} \\ &= \text{Wood Waste Rate (lbs. of wood waste/hr)} \times \text{Emission Factor (lbs of PM/lbs of Wood Waste)} \end{aligned}$$



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**Dried Wood Shaving Screening and Transfer**

Dried Wood Rate: 12.35 Oven Dried Tons per hour

Shaker Screen Efficiency: 95%

The facility uses the USA EPA's WebFIRE Wood Waste Handling database for Particulate Matter emissions. For these calculations it is assumed that PM<sub>10</sub> is equivalent to PM<sub>2.5</sub>.

The emission factor used to calculate Particulate Matter = 1.0 pounds of PM per ton of wood waste

The emission factor used to calculate PM<sub>10</sub> = 0.580 pounds of PM<sub>10</sub> per ton of wood waste.

$$\text{Wood Waste Rates (tons of waste/hr)} = \text{Dried Wood Rate (Oven Dried Tons/hr)} \times (1 - \text{Shaker Screen Efficiency})$$

$$\text{Emission Rates (lb/hr)} = \text{Wood Waste Rates (tons of waste/hr)} \times \text{Emission Factors (lb Pollutant/tons of waste)}$$

FACILITY WIDE EMISSIONS			
Pollutant	Uncontrolled	Controlled	PTE
	TPY	TPY	TPY
PM	54.22	--	54.22
PM <sub>10</sub>	49.71	--	49.71
PM <sub>2.5</sub>	49.71	--	49.71
SO <sub>2</sub>	0.00	--	0.00
NO <sub>x</sub>	31.37	--	31.37
CO	38.35	--	38.35
VOC	48.68	--	48.68
1,1,1-Trichloroethane CAS#: 71-55-6	6.49E-04	--	6.49E-04
Acetaldehyde CAS#: 75-07-0	7.03E-01	--	7.03E-01
Acetophenone CAS#: 98-86-2	3.46E-03	--	3.46E-03
Acrolein CAS#: 107-02-8	2.43E-01	--	2.43E-01
Benzene CAS#: 71-43-2	5.36E-02	--	5.36E-02
Biphenyl CAS#: 92-52-4	2.11E-03	--	2.11E-03
Bis-(2—ethylhexyl phthalate) CAS#: 118-71-7	1.73E-02	--	1.73E-02
Bromomethane CAS#: 74-83-9	1.51E-03	--	1.51E-03
Carbon Disulfide CAS#: 75-15-0	9.74E-04	--	9.74E-04



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<b>FACILITY WIDE EMISSIONS</b>			
<b>Pollutant</b>	<b>Uncontrolled</b>	<b>Controlled</b>	<b>PTE</b>
	<b>TPY</b>	<b>TPY</b>	<b>TPY</b>
Carbon Tetrachloride CAS#: 53-23-5	6.49E-04	--	6.49E-04
Chloromethane CAS#: 74-87-3	5.95E-03	--	5.95E-03
Cumene CAS#: 98-82-8	3.73E-03	--	3.73E-03
Di-N-butyl phthalate CAS#: 84-74-2	1.24E-03	--	1.24E-03
Ethyl Benzene CAS#: 100-41-4	2.06E-04	--	2.06E-04
Formaldehyde CAS#: 50-00-0	1.35E+00	--	1.35E+00
Hydroquinone CAS#: 123-31-9	3.25E-03	--	3.25E-03
Xylene	3.19E-02	--	3.19E-02
Methanol CAS#: 67-56-1	7.57E-01	--	7.57E-01
Methyl Ethyl Ketone (TAP only) CAS#: 78-93-3	2.65E-01	--	2.65E-01
Methyl Isobutyl Ketone CAS#: 108-10-1	1.30E-01	--	1.30E-01
Methylene Chloride CAS#: 75-09-2	3.41E-02	--	3.41E-02
Phenol CAS#:108-95-2	3.57E-01	--	3.57E-01
Propionaldehyde CAS#: 123-38-6	1.73E-01	--	1.73E-01
Styrene CAS#: 100-42-5	6.49E-03	--	6.49E-03
Toluene CAS#: 108-88-3	1.14E-01	--	1.14E-01
Total HAPs	3.996	--	3.996

**SPECIAL CONDITIONS, MONITORING, LIMITS**

The facility was issued a Consent Order (15-047-A) and an Administrative Order (17-044-A) which contained requirements that the facility monitor and record fugitive emission incidents and submit a written fire control plan, these requirements are being incorporated into this operating permit.



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Condition B.9 and B.10 outline the facility's requirements for visual inspections during source operation to ensure that fugitive emissions are properly controlled, and corrective measures are recorded. The facility is required to conduct Method 22 as the visual inspection method and must keep all records on site to demonstrate the amount of fugitive emission occurrences and the corrective actions taken to minimize the fugitive emissions.

Condition B.8 requires the facility to maintain the written fire control plan on site, this was submitted in January 2016. Any updates to this plan must be submitted to the department for review and maintained on site.

Condition B.11 outlines the requirements for the facility to establish and maintain a Fugitive Dust Management Plan, which is required to be submitted to the Department for approval. This plan shall include all information detailed in this condition as well as any other relevant procedures the facility determines is necessary to help prevent fugitive emissions from leaving the property boundaries.

**REGULATIONS**

**Not Applicable - Section II(E) (Synthetic Minor)**

This facility is a true minor source, no synthetic minor limits have been established.

**Not Applicable - Standard No. 1 (Emissions from Fuel Burning Operations)**

The only fuel burning source on site does not meet the definition of fuel burning operations, as defined in S.C. Regulation 61-62.1, Section 1(31). For this reason, Standard No. 1 does not apply.

**Applicable - Standard No. 4 (Emissions from Process Industries)**

All sources operating at the facility are subject to this regulation, in addition to the PM limitations the facility is also subject to 20% opacity limits.

Process	Max Process Weight Rate (tons/hr)	PM Allowable at Max (lb/hr)	Uncontrolled Emissions PM (lb/hr)	Controlled Emissions PM (lb/hr)	Monitoring
01/Wood Shaving and Drying Process	24.695	35.14	20.31	20.31	Cyclone O&M for opacity compliance

**Applicable - Standard No. 5.2 (Control of Oxides of Nitrogen (NOx))**

The facility's existing Dryer is subject to this regulation and must achieve a minimum of 30% reduction from uncontrolled levels in the discharge of NO<sub>x</sub> resulting from fuel burning. Uncontrolled emissions of NO<sub>x</sub> resulting from fuel burning are calculated using AP-42 factor for Rotary Dryers that are direct-fired with softwood. The uncontrolled factor is 0.58 lb/ODT, a 30% reduction would result in an emission factor of 0.41 lb/ODT. The facility has submitted a manufacturer's guarantee that the burner in the Dryer can meet these requirements see email dated 11/11/2010.



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**Not Applicable - Standard No. 7 (Prevention of Significant Deterioration)**

This facility is classified as a minor source and is not subject to this regulation, as the facility potential to emit is below 250.0 tons per year.

**Applicable - 61-62.6 (Control of Fugitive Particulate Matter)**

The facility shall comply with all applicable requirements in this regulation, the pneumatic transfer to the Tractor Trailers (Truck 1) and any other non-enclosed operations shall use all proper measures to limit any potential particulate matter becoming airborne.

**40 CFR 60 and 61-62.60 (New Source Performance Standards (NSPS))**

**Not Applicable** – There are no subparts that are subject to any sources on site.

**40 CFR 61 and 61-62.61 (National Emission Standards for Hazardous Air Pollutants (NESHAP))**

**Not Applicable** – There are no subparts that are subject to any sources on site.

**40 CFR 63 and 61-62.63 (National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories)**

**Not Applicable** – There are no subparts that are subject to any sources on site.

**Not Applicable - 61-62.68 (Chemical Accident Prevention Provisions)**

The facility does not store any materials on site above the applicability thresholds listed in this regulation.

**Not Applicable - 40 CFR 64 (Compliance Assurance Monitoring)**

This facility is not a Title V source and therefore is not subject to any requirements in this regulation.

**AMBIENT AIR STANDARDS REVIEW**

**Applicable - Standard No. 2 (Ambient Air Quality Standards)**

The facility has demonstrated compliance with this regulation through modeling using SCREEN3, see modeling summary dated December 3, 2010.

**Applicable - Standard No. 8 (state only) (Toxic Air Pollutants)**

The facility has demonstrated compliance with this regulation through modeling using SCREEN3, see modeling summary dated December 3, 2010.



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<b>PERIODIC MONITORING</b>					
ID	Regulatory Requirement	Measured Parameter	Required Monitoring Frequency	Reporting Frequency	Monitoring Basis/ Justification
CYC 1	S.C. Regulation 61-62.5, Standard No. 4 Opacity	O&M	Weekly	N/A	The Process Cyclone shall complete weekly operational and maintenance checks. The cyclone shall be checked for any interferences with proper operation. Any corrective action taken shall be maintained on site in a log.
RDRY 1	S.C Regulation 61-62.5, Standard No. 5.2 NOx	Tune-ups	Every 2 Years	N/A	S.C Regulation 61-62.5, Standard No. 5.2, Section IV requires tune-ups performed every two years. Records of the tune ups much be maintained on site.

**PUBLIC NOTICE**

This State Operating Permit has undergone a 30-day public notice period in accordance with SC Regulation 61-62.1, Section II(N). The comment period was open from March 14, 2024 to April 12, 2024 and was placed on the BAQ website during that time period. Comments were received during the comment period.

To ensure compliance with the operating permit requirements, the Department did not issue the renewed operation permit until a set of upgrades to address the causes of past issues were completed, to the Department’s satisfaction. The Department visited the site on February 5, 2025, and verified that all required upgrades were completed. These upgrades include:

1. Cyclone repairs:
  - a. Install video monitoring equipment on the shaker screen,
  - b. Remove the canvas sides and replace them with solid sides,
  - c. Seal all holes and repair all process cyclone,
2. All conveyor systems following the cyclone must be enclosed
3. Pave all surfaces at the facility entrance with a hard top surface,
4. Complete the replacement of the Pneumatic Transfer to Fuel Bins with a fully enclosed auger system,
5. Install a video monitoring system in the burner of the facility’s Dryer.



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### **SUMMARY AND CONCLUSIONS**

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.