

**Renewable Biomass Group  
Potential Emission Calculations**

**Table C-19. Dry Material Storage Operating Parameters**

<b>Emission Source</b>	<b>Annual Throughput (tons/year)<sup>1</sup></b>
Dry Chip Storage	497,000

1. Throughput based on amount of finished pellets.

**Table C-20. Raw Material Handling Emission Factors**

<b>Pollutant</b>	<b>Emission Factor<sup>1</sup> (lb/ton)</b>
Filterable PM	5.95E-05
Filterable PM <sub>10</sub>	2.81E-05
Filterable PM <sub>2.5</sub>	4.26E-06

1. PM emission factor for receiving and storage calculated using continuous drop point equation from AP-42, Section 13.2.4 Aggregate Handling and Storage Piles (11/06).

$$\text{PM Emission Factor (lb/ton)} = [k * (0.0032) * (U/5)^{1.3}] / (M/2)^{1.4}$$

k - PM	0.74	Particle size multiplier for PM <sub>30</sub> per AP-42, Section 13.2.4-4 (11/06).
k - PM <sub>10</sub>	0.35	Particle size multiplier for PM <sub>10</sub> per AP-42, Section 13.2.4-4 (11/06).
k - PM <sub>2.5</sub>	0.053	Particle size multiplier for PM <sub>2.5</sub> per AP-42, Section 13.2.4.3.
M (%)	40	Moisture content indicated on moisture balance.
U	7.400	Based on EPA's TANKS 4.09d Database for Athens, GA.

**Table C-21. Potential Emissions from Raw Material Handling**

<b>Emission Source</b>	<b>Potential Emissions<sup>1</sup></b>					
	<b>Filterable PM (lb/hr) (tpy)</b>		<b>Filterable PM<sub>10</sub> (lb/hr) (tpy)</b>		<b>Filterable PM<sub>2.5</sub> (lb/hr) (tpy)</b>	
Dry Chip Storage	3.37E-03	1.48E-02	1.60E-03	6.99E-03	2.42E-04	1.06E-03

1. Potential Emissions are calculated as follows:

$$\text{Potential Emissions (tons/year)} = \text{Emission Factor (lb/ton)} * \text{Annual Throughput (tons/year)} / 2,000 \text{ (lbs/ton)}$$

$$\text{Potential Emissions (lb/hour)} = \text{Emission Factor (lb/ton)} * \text{Annual Throughput (tons/year)} / \text{Annual Operation (hours/year)}$$

Annual operation assumes 8,760 hours/year of operation

**Table C-22. Dry Chip Storage Potential VOC and HAP Emissions**

<b>Pollutant</b>	<b>Emission factor (lb/ton)</b>	<b>Potential Emissions<sup>5</sup> (lb/hr) (tpy)</b>	
VOC <sup>1</sup>	0.12	6.81	29.82
Acetaldehyde <sup>2</sup>	1.00E-03	0.06	0.25
Formaldehyde <sup>2</sup>	2.00E-03	0.11	0.50
Methanol <sup>1</sup>	1.95E-03	0.11	0.48
Total HAP <sup>3,4</sup>	-	0.28	1.23

1. Emission factors from Enviva Pellets Sampson (NC) permit application, pursuant to the mean emission factors from NCASI's Wood Products Database (February 2013) for dry wood handling operations at an OSB mill. Factors converted from lb/MSF to lb/ODT using the typical density and moisture content of an OSB panel, per the Enviva application.

2. Emission factors from GA EPD guidance for storage/handling at Wood Pellets Facilities.

3. Pursuant to information included in the Enviva Pellets Sampson (NC) permit application and NCASI emission factors referenced, the individual HAP quantified from NCASI include formaldehyde and methanol. The worst-case emission factors between the NCASI Wood Products Emission Factors and Georgia EPD guidance were used to quantify HAP emissions. Emissions of individual HAP beyond those listed are not expected to be emitted.

4. Total HAP is the sum of all individual HAP emissions.

5. Potential emissions are quantified for the entire dry chip storage process at the Adel facility using the potential facility production rate of 497,000 short tons/yr for all storage silos, and not at each individual storage bin or silo. Potential emissions are calculated as follows:

$$\text{Potential Emissions (lb/hour)} = \text{Potential Emissions (tpy)} * 2,000 \text{ (lb/ton)} / \text{Annual Operation (hr/yr)}$$

$$\text{Potential Emissions (tons/year)} = \text{Emission Factor (lb/ton)} * (1 - \text{Control Efficiency (\%)}) * \text{Annual Throughput (tons/year)} / 2,000 \text{ (lbs/ton)}$$

Where annual emissions assume 8,760 hours of operation per year for conservatism.