# *Detailed Emissions Calculations*

# Eagle 1200-25CC Crusher Emissions - Cirillo Brothers, Inc.

| Equipment | Max Output[1] | PM Emissions[1] | PM10 Emissions[7] | CO Emissions[1] | NOx Emissions[1, 2] | SOx Emissions[3] | HC Emissions[1, 2] |
|---|---|---|---|---|---|---|---|
| John Deere 6135HF485 Diesel Engine[6] | 400 HP 300 kW | Based on 400 HP / 300 kW | Based on 400 HP / 300 kW | Based on 400 HP / 300 kW | Based on 400 HP / 300 kW | Based on Fuel Consumption data | Based on 400 HP / 300 kW |
| | | 0.10 g/kw-hr | 0.05 g/kw-hr | 0.60 g/kw-hr | 3.23 g/kw-hr | 0.36 lb/hp-hr (fuel) | 0.17 g/kw-hr |
| | | 0.07 lb/hr | 0.03 lb/hr | 0.40 lb/hr | 2.13 lb/hr | 0.14 lb/hr | 0.11 lb/hr |
| **Emission Point** | 1000 hrs/yr | 66.06 lb/yr | 31.46 lb/yr | 396.37 lb/yr | 2133.80 lb/yr | 144.00 lb/yr | 112.31 lb/yr |
| **PT1** | | 0.03 ton/yr | 0.02 ton/yr | **0.20 ton/yr** | **1.07 ton/yr** | **0.07 ton/yr** | **0.06 ton/yr** |

| Equipment | Max Output[4] | Uncontrolled PM Emissions[4] | Uncontrolled PM10 Emissions[4] | Controlled PM Emissions[4] | Controlled PM10 Emissions[4] | Total Uncontrolled PM Emissions | Total Controlled PM Emissions |
|---|---|---|---|---|---|---|---|
| Eagle 1200-25CC Crusher | 1000 hrs/yr | 5.40E-03 lb/ton | 2.40E-03 lb/ton | 1.20E-03 lb/ton | 5.40E-04 lb/ton | 0.94 lb/hr | 0.23 lb/hr |
| | 100 ton/hr[4] | 0.54 lb/hr | 0.24 lb/hr | 0.12 lb/hr | 0.05 lb/hr | 906.06 lb/yr | 200.06 lb/yr |
| **Emission Point** | (maximum) | 540.00 lb/yr | 240.00 lb/yr | 120.00 lb/yr | 54.00 lb/yr | 0.45 ton/yr | **0.10 ton/yr** |
| **PT2** | | 0.27 ton/yr | 0.12 ton/yr | 0.06 ton/yr | 0.03 ton/yr | | |

| Equipment | Max Output[4] | Uncontrolled PM Emissions[4] | Uncontrolled PM10 Emissions[4] | Controlled PM Emissions[4] | Controlled PM10 Emissions[4] | Total Uncontrolled PM10 Emissions | Total Controlled PM10 Emissions |
|---|---|---|---|---|---|---|---|
| Eagle Crusher Conveyor Discharge | 1000 hrs/yr | 3.00E-03 lb/ton | 1.10E-03 lb/ton | 1.40E-04 lb/ton | 4.60E-05 lb/ton | 0.38 lb/hr | 0.09 lb/hr |
| | 100 ton/hr[4] | 0.30 lb/hr | 0.11 lb/hr | 0.01 lb/hr | 4.60E-03 lb/hr | 381.46 lb/yr | 90.06 lb/yr |
| **Emission Point** | (maximum) | 300.00 lb/yr | 110.00 lb/yr | 14.00 lb/yr | 4.60 lb/yr | 0.19 ton/yr | **0.06 ton/yr** |
| **PT3** | | 0.15 ton/yr | 0.06 ton/yr | 0.01 ton/yr | 2.30E-03 ton/yr | | |

**Notes:**

1 Based on certified levels obtained from California Air Resources Board, Certificate Date 12/14/2007.

2 California Air Resources Board provides certified emissions for NMHC+NOx. Of these emissions, it is assumed that 95% of the emissions are in the form of NOx, while 5% of the emissions are NMHC (HC). This ratio was found in Table B22, located at www.arb.ca.gov/msprog/moyer/guidelines/current.htm.

3 SOx based on fuel consumption data supplied by John Deere detailed in an Engine Performance Curve. The calculations for SOx assumes a maximum sulfur content of 0.05% for diesel fuel.

4 Emission factors based on AP-42, Table 11.19.2-2 (8/04).

5 Maximum output of crusher estimated based upon capacities of other crushers of similar size.

6 John Deere 6135HF485 diesel engine is Tier III Certified by the Environmental Protection Agency.

7 PM 10 assumed to equal PM/2.1

**Assumptions:**

1 g = 0.002205 lbs
Total Hours per year = 1,000
Hourly Throughput = 100 tons
Annual Throughput = 100,000 tons
Crusher Max Output = 400 HP or 300 kW
Max Sulfur Content of Diesel Fuel = 0.05%
1 hp = 0.749 kW
1 gal of Diesel Fuel = 7.2 lbs

Revision 2 - April 1, 2009