CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT

Mulzer Crushed Stone, Inc.
Highway 662, ½ mile west of Newburgh
Newburgh, IN 47630

is hereby authorized to construct the following equipment
which will increase the source capacity from 400 to 1,400 tons per hour.

(a) Two (2) crane barge buckets with two (2) hoppers, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

(b) Three (3) lower end conveyors, known as MJ-0819, 0824, and 0825, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

(c) One (1) lower end conveyor, known as MJ 0806, a replacement in kind of an existing conveyor.

(d) Four (4) upper end conveyors, known as MJ-0820, 0821, 0822 and 0823, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

(e) Two (2) conveyors, known as MJ-0826 and 0827, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

(f) Two (2) radial stacker conveyors, known as MJ-0828 and 0829, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP 173-9980-00009	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

Construction Conditions

General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).

2. That this permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

3. That pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

4. That pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

First Time Operation Permit

6. That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

   (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.

   (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

   (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

   (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).

(e) Pursuant to 326 IAC 2-7-4, the Permittee shall apply for a Title V operating permit within twelve (12) months after the source becomes subject to Title V. This 12-month period starts at the postmarked submission date of the Affidavit of Construction. If the construction is completed in phases, the 12-month period starts at the postmarked submission date of the Affidavit of Construction that triggers the Title V applicability. The operation permit issued shall contain as a minimum the conditions in the Operation Conditions section of this permit.

NSPS Reporting Requirement

7. That pursuant to the New Source Performance Standards (NSPS), Part 60.670 - 60.676, Subpart OOO, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

(a) Commencement of construction date (no later than 30 days after such date);

(b) Actual start-up date (within 15 days after such date); and

(c) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, IN 46206-6015

The application and enforcement of these standards have been delegated to the IDEM-OAM. The requirements of 40 CFR Part 60 are also federally enforceable.

8. That when the facility is constructed and placed into operation the following operation conditions shall be met:

Operation Conditions

General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).

2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

Preventive Maintenance Plan

3. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:

(a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.

(b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.

(c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

Transfer of Permit

4. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):

(a) In the event that ownership of these sand, gravel and crushed stone storage and distribution facilities is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.

(b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.

(c) The OAM shall reserve the right to issue a new permit.

Permit Revocation

5. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

(a) Violation of any conditions of this permit.

(b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.

(c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.

(d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.

(e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

6. That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

Performance Testing

7. That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance opacity tests shall be performed for conveying facilities within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.

   (a) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.

   (b) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.

   (c) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.

   (d) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These actions shall be implemented immediately unless notified by OAM that they are acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented.

   (e) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

Annual Emission Reporting

8. That pursuant to 326 IAC 2-6 (Emission Reporting), the Permittee must annually submit an emission statement for the source. This statement must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. A copy of this rule is enclosed. The annual statement must be submitted to:

   Indiana Department of Environmental Management
   Technical Support and Modeling Section, Office of Air Management
   100 North Senate Avenue, P. O. Box 6015
   Indianapolis, Indiana 46206-6015

   The annual emission statement covers the twelve (12) consecutive month time period starting January 1 and ending December 31.

Opacity Limitations

9. That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following unless otherwise specified in this permit:

   (a) visible emissions shall not exceed an average of 40 percent opacity in 24 consecutive readings.

(b) visible emissions shall not exceed 60 percent opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

10. Particulate Matter (PM) Limitation
Particulate matter emissions rate shall not exceed 56.8 pounds per hour (249 tons per year). This limitation will make 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)), not applicable and will also satisfy the requirements of 326 IAC 6-3-2.

Fugitive Dust Emissions
11. That pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), the Permittee shall be in violation of 326 IAC 6-4 (Fugitive Dust Emissions) if any of the criteria specified in 326 IAC 6-4-2(1) through (4) are violated. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM. [326 IAC 6-4-5(c)].

Fugitive Dust Emissions
12. That pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emissions Limitations), fugitive particulate matter emissions shall be controlled according to the plan submitted on July 27, 1998. This plan consists of watering stockpiles and haul road on an as-needed basis.

New Source Performance Standard
13. That the conveying facilities shall comply with the New Source Performance Standards, 326 IAC 12 (40 CFR 60.670, Subpart OOO) “Standards of Performance for Nonmetallic Mineral Processing Plants”. Pursuant to this rule, particulate emissions from conveying operations shall be limited to ten (10%) percent or less. This will also satisfy the requirements of 326 IAC 5-1 (Opacity Limitations).

Open Burning
14. That the permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6.

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name:	Mulzer Crushed Stone, Inc.
Source Location:	Highway 662, ½ mile west of Newburgh, Indiana 47630
County:	Warrick
Construction Permit No.:	CP 173-9980-00009
SIC Code:	1422
Permit Reviewer:	Mark L. Kramer

The Office of Air Management (OAM) has reviewed an application from Mulzer Crushed Stone, Inc., relating to the construction and operation of the proposed modification to an existing permitted sand, gravel and crushed stone storage and distribution source, consisting of the following equipment:

(a) Two (2) crane barge buckets with two (2) hoppers, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

(b) Three (3) lower end conveyors, known as MJ-0819, 0824, and 0825, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

(c) One (1) lower end conveyor, known as MJ 0806, a replacement in kind of an existing conveyor.

(d) Four (4) upper end conveyors, known as MJ-0820, 0821, 0822 and 0823, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

(e) Two (2) conveyors, known as MJ-0826 and 0827, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

(f) Two (2) radial stacker conveyors, known as MJ-0828 and 0829, capacity: 700 tons of sand, gravel or crushed stone per hour, each.

This modification to the existing 400 tons per hour permitted source will bring the total capacity of the lower plus upper end lines to 1,400 tons per hour (700 tons per hour, each). The net increase in production is 1,000 tons per hour.

Stack Summary

There are no stacks associated with the facilities that comprise this modification.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on July 27, 1998, with additional information received on September 15, 1998.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets), pages 1 - 12 of 12 for detailed calculations. The worst case emissions from either sand or stone are used in reporting the potential emissions before and after controls.

The sand, gravel and crushed stone distribution operations are subject to 326 IAC 6-3-2 (Particulate emission limitations which limits the particulate matter to $E = 55.0 P^{0.11} - 40$ or 73.1 pounds per hour (320 tons per year) for processing operations (total process weight, P, equals 700 tons per hour).

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	**Allowable Emissions** (tons/yr)	**Potential Emissions** (tons/yr)
Particulate Matter (PM)	320	170
Particulate Matter (PM_{10})	163	163
Sulfur Dioxide (SO_2)	0.000	0.000
Volatile Organic Compounds (VOC)	0.000	0.000
Carbon Monoxide (CO)	0.000	0.000
Nitrogen Oxides (NO_x)	0.000	0.000
Single Hazardous Air Pollutant (HAP)	0.000	0.000
Combination of HAPS	0.000	0.000

(a) Allowable PM emissions are determined from the applicability of rule 326 IAC 6-3.

(b) The potential emissions before control are less than the allowable emissions, therefore, the potential emissions before control are used for the permitting determination.

(c) Allowable emissions (as defined in the Indiana Rule) of particulate matter are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

County Attainment Status

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_X) are precursors for the formation of ozone. Therefore, VOC and NO_X emissions are considered when evaluating the rule applicability relating to the ozone standards. Warrick County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_X emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Warrick County has been classified as attainment or unclassifiable for all remaining criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(c) Fugitive Emissions

Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive PM emissions are not counted toward determination of PSD applicability.

Source Status

Existing Source PSD, Part 70 or FESOP Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	**Emissions** (tons/yr)
PM	less than 100
PM_{10}	less than 100
SO_2	0.00
VOC	0.00
CO	0.00
NO_X	0.00

(a) This existing source is **not** a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not in one of the 28 listed source categories.

(b) These emissions were based on the application for Operation Permit renewal OP 173-7947-00009 received December 13, 1996 which stated that the Newburgh Plant is a minor source, not subject to Title V.

Proposed Modification

PTE from the proposed modification (based on 8,760 hours of operation per year at rated capacity including enforceable emission control and production limit, where applicable):

Pollutant	PM (tons/yr)	PM_{10} (tons/yr)	SO_2 (tons/yr)	VOC (tons/yr)	CO (tons/yr)	NO_X (tons/yr)
Proposed Modification	1.29	0.613	0.000	0.000	0.000	0.000
PSD Threshold Level	250	250	250	250	250	250

This modification to an existing minor stationary source is not major because the emission increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source is now subject to the Part 70 Permit requirements because the potential to emit (PTE) of PM_{10} is greater than 100 tons per year.

Prior to this proposed modification according to information received by OAM on December 13, 1996, the existing source was not subject to the Title V program.

This status is based on all the air approvals issued to the source. This status has been verified by the OAM inspector assigned to the source.

Federal Rule Applicability

This sand, gravel and crushed stone storage and distribution facilities are subject to the New Source Performance Standard 326 IAC 12 and 40 CFR 60.670 through 60.676, Subpart OOO. Since the PM emissions from the conveyors are not emitted through a stack, the 0.05 grains per dry standard cubic foot of exhaust air and the seven (7) percent opacity limit pursuant to 40 CFR 60.672 (a)(1) and (2) do not apply. This rule requires the particulate emissions from the conveying operations to be limited to ten (10) percent or less (enclosed is a copy of this federal rule).

State Rule Applicability

326 IAC 2-6 (Emission Reporting)

This source is subject to 326 IAC 2-6 (Emission Reporting), because the source potentially emits more than 100 tons per year of PM_{10}, including fugitive emissions in Warrick County. Pursuant to this rule, the owner/ operator of this facility must annually submit an emission statement of the facility. The annual statement must be received by July 1 of each year and must contain the minimum requirements as specified in 326 IAC 2-6-4.

326 IAC 6-3 (Process Operations)

The sand, gravel and crushed stone distribution operations are subject to 326 IAC 6-3-2 (Particulate emission limitations which limits the particulate matter to $E = 55.0 P^{0.11} - 40$ or 73.1 pounds per hour (320 tons per year) for processing operations (total process weight, P, equals 700 tons per hour). Since this PM emission limit of 320 tons per year is greater than the PSD threshold level of 250 tons per year, the allowable PM emissions will be limited to 56.8 pounds per hour (249 tons per year). Since this PM emission limit of 56.8 pounds per hour is greater than the potential PM emission rate after control of 0.295 pounds per hour, the sand, gravel and crushed stone distribution operations comply with this rule.

326 IAC 6-5 (Fugitive Particulate Matter Emissions Limitations)

Fugitive particulate matter emissions shall be controlled according to the plan received on July 27, 1998**.** This plan consists of watering stockpiles and haul roads on an as-needed basis.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

None of these listed air toxics will be emitted from this proposed construction.

Conclusion

The construction of this sand, gravel and crushed stone distribution facilities will be subject to the conditions of the attached proposed **Construction Permit No. CP 173-9980-00009.**

Appendix A : Emission Calculations (Sand)

Company Name:	**Mulzer Crushed Stone, Inc.**
Plant Location:	**Newburgh, Indiana**
County:	**Warrick**
CP:	**173-9980**
PLt ID:	**173-00009**
Date Received:	**July 27, 1998**
Permit Reviewer:	**Mark L. Kramer**

Sand and Gravel

* * PM emissions before controls * *

Storage					** see page 8 **						0.000	tons/yr	AP-42 Ch.11.2.3
Transporting					** see page 9 **						118.639	tons/yr	AP-42 Ch.11.2.1
Loading & Unloading			1000	ton/hr x	0.008722	lb/ton	/ 2000 lb/ton x	8760	hr/yr =		38.204	tons/yr	AP-42 Ch.11.2.3
Crushing (primary)	0	no. of units x	0	ton/hr x	0.000172	lb/ton	/ 2000 lb/ton x	8760	hr/yr =		0.000	tons/yr	AP-42 Ch.11.19.2
Crushing (secondary)	0	no. of units x	0	ton/hr x	0.000172	lb/ton	/ 2000 lb/ton x	8760	hr/yr =		0.000	tons/yr	AP-42 Ch.11.19.2
Crushing (tertiary)	0	no. of units x	0	ton/hr x	0.001240	lb/ton	/ 2000 lb/ton x	8760	hr/yr =		0.000	tons/yr	AP-42 Ch.11.19.2
Screening	0	no .of units x	0	ton/hr x	0.001800	lb/ton	/ 2000 lb/ton x	8760	hr/yr =		0.000	tons/yr	AP-42 Ch.11.19.2
Conveyor Transfer			1000	ton/hr x	0.000101	lb/ton	/ 2000 lb/ton x	8760	hr/yr =		0.442	tons/yr	AP-42 Ch.11.19.2
Total PM emissions before controls:											157.285	tons/yr	

* * PM emissions after controls * *

Storage	0.000	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Transporting	118.639	tons/yr x	50%	emitted after controls =	59.319	tons/yr
Loading & Unloading	38.204	tons/yr x	100%	emitted after controls =	38.204	tons/yr
Crushing (primary)	0.000	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Crushing (secondary)	0.000	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Crushing (tertiary)	0.000	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Screening	0.000	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Conveying	0.442	tons/yr x	10%	emitted after controls =	0.044	tons/yr
Total PM emissions after controls:					97.568	tons/yr

* *PM fugitive vs. nonfugitive * *

Storage	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Transporting	118.64	tons/yr x	50%	emitted after controls =	59.319	tons/yr
Loading / Unloading	38.20	tons/yr x	100%	emitted after controls =	38.204	tons/yr
Total fugitive PM emissions:					97.523	tons/yr
Crushing (primary)	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Crushing (secondary)	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Crushing (tertiary)	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Screening	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Conveying:	0.44	tons/yr x	10%	emitted after controls =	0.044	tons/yr
Total nonfugitive PM emissions:					0.044	tons/yr

* * storage * *

Storage PM emissions, which result from wind erosion, are determined by the following calculations:

Ef=	.5)*(365-p)/235*(f/15)	
=	1.85	lb/acre/day
where s=	1.6	% silt content of material
p=	125	days of rain greater than or equal to 0.01 inches
f=	15	% of wind greater than or equal to 12 mph

EP(storage)=	ton)/(43560 sqft/acre)/(25 ft)*(365 day/yr)	
=	0.00	tons/yr
where sc=	0	,000 tons storage capacity No Increase in Storage Capacity

* * unpaved roads * *

The following calculations determine the amount of emissions created by unpaved roads, based on 8760 hours of use and AP-42, Ch 11.2.1.

44.4	trips/hr x		
0.1	miles/trip x		
2	(round trip) x		
8,760	hr/yr=	77788.8	miles per yr

Ef=	(W/3)^0.7*(w/4)^0.5*((365-p)/365)	
=	3.05	lb/mile
where k =	0.8	(particle size multiplier)
s =	4.8	% silt content of unpaved roads
p =	125	days of rain greater than or equal to 0.01 inches
S =	10	miles/hr vehicle speed
W =	23.75	tons average vehicle weight
w =	12	wheels

3.05	lb/mi x	77788.8	mi/yr =	118.64	tons/yr
	2000	lb/ton			

* * aggregate handling * *

The following calculations determine the amount of emissions created by truck loading and unloading of aggregate, based on 8760 hours of use and AP-42, Ch 11.2.3.

Ef=	k*(0.0032)* (U/5)^1.3/(M/2)^1.4	
=	0.0087	lb/ton
where k =	0.74	(particle size multiplier)
U=	10	mile/hr mean wind speed
M=	1.5	% material moisture content

Mulzer Crushed Stone, Inc.
Newburgh, Indiana

CP 173-9980
Plt ID 173-00009

* *PM-10 emissions before controls * *

Storage					** see page 11 **					0.000	tons/yr	AP-42 Ch.11.2.3
Transporting					** see page 12 **					118.639	tons/yr	AP-42 Ch.11.2.1
Loading & Unloading			1,000	ton/hr x	0.0087	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	38.204	tons/yr	AP-42 Ch.11.2.3
Crushing (primary)	0	no. of units x	0	ton/hr x	0.00008	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.000	tons/yr	AP-42 Ch.11.19.2
Crushing (secondary)	0	no. of units x	0	ton/hr x	0.00008	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.000	tons/yr	AP-42 Ch.11.19.2
Crushing (tertiary)	0	no. of units x	0	ton/hr x	0.00059	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.000	tons/yr	AP-42 Ch.11.19.2
Screening	0	no .of units x	0	ton/hr x	0.00084	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.000	tons/yr	AP-42 Ch.11.19.2
Conveyor Transfer			1,000	ton/hr x	0.00005	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.210	tons/yr	AP-42 Ch.11.19.2
Total PM-10emissions before controls:										157.053	tons/yr	

* * PM-10 emissions after controls * *

Storage	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Transporting	118.64	tons/yr x	50%	emitted after controls =	59.319	tons/yr
Loading & Unloading	38.20	tons/yr x	100%	emitted after controls =	38.204	tons/yr
Crushing (primary)	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Crushing (secondary)	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Crushing (tertiary)	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Screening	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Conveying	0.21	tons/yr x	10%	emitted after controls =	0.021	tons/yr
Total PM-10 emissions after controls:					97.544	tons/yr

* *PM-10 fugitive vs. nonfugitive * *

Storage	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Transporting	118.64	tons/yr x	50%	emitted after controls =	59.319	tons/yr
Loading / Unloading	38.20	tons/yr x	100%	emitted after controls =	38.204	tons/yr
Total fugitive PM-10 emissions:					97.523	tons/yr
Crushing (primary)	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Crushing (secondary)	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Crushing (tertiary)	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Screening	0.00	tons/yr x	10%	emitted after controls =	0.000	tons/yr
Conveying:	0.21	tons/yr x	10%	emitted after controls =	0.021	tons/yr
Total nonfugitive PM-10 emissions:					0.021	tons/yr

* * storage * *

Storage PM-10 emissions, which result from wind erosion, are determined by the following calculations:

Ef=	1.7*(s/1.5)*(365-p)/235*(f/15)	
=	1.85	lb/acre/day
where s =	1.6	% silt content of material
p=	125	days of rain greater than or equal to 0.01 inches
f=	15	% of wind greater than or equal to 12 mph

Ep(storage)=	ton)/(43560 sqft/acre)/(25 ft)*(365 day/yr)		
=	0.00	tons/yr	
where sc=	0	,000 tons storage capacity	No increase in storage capacity

* * unpaved roads * *

The following calculations determine the amount of PM-10 emissions created by unpaved roads, based on 8760 hours of use and AP-42, Ch 11.2.1.

44.4	trips/hr x		
0.1	miles/trip x		
2	(round trip) x		
8,760	hr/yr=	77788.8	miles per yr

Ef=	W/3)^0.7*(w/4)^0.5*((365-p)/365)	
=	3.05	lb/mile
where k =	0.8	(particle size multiplier)
s =	4.8	% silt content of unpaved roads
p =	125	days of rain greater than or equal to 0.01 inches
S =	10	miles/hr vehicle speed
W =	23.75	tons average vehicle weight
w =	12	wheels

3.05	lb/mi x	77788.8	mi/yr =	118.64	tons/yr
	2000	lb/ton			

* * aggregate handling * *

The following calculations determine the amount of PM-10 emissions created by truck loading and unloading of aggregate, based on 8760 hours of use and AP-42, Ch 11.2.3.

Ef =	k*(0.0032)*	(U/5)^1.3/(M/2)^1.4	
=	0.0087	lb/ton	
where k =	0.74	(particle size multiplier)	
U =	10	mile/hr mean wind speed	
M =	1.5	% material moisture content	

Appendix A : Emission Calculations (Stone)

Company Name:	**Mulzer Crushed Stone, Inc.**
Plant Location:	**Newburgh, Indiana**
County:	**Warrick**
Date Received:	**July 27, 1998**
CP:	**173-9980**
Plt ID:	**173-00009**
Permit Reviewer:	**Mark L. Kramer**

Crushed Stone

* * PM emissions before controls * *

Storage				** see page 2 **					0.00	tons/yr	AP-42 Ch.11.2.3
Transporting				** see page 3 **					118.64	tons/yr	AP-42 Ch.11.2.1
Loading & Unloading			1,000 ton/hr x	0.0087	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	38.20	tons/yr	AP-42 Ch.11.2.3
Crushing (primary)	0	no. of units x	0 ton/hr x	0.0007	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.00	tons/yr	AP-42 Ch.11.19.2
Crushing (secondary)	0	no. of units x	0 ton/hr x	0.0007	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.00	tons/yr	AP-42 Ch.11.19.2
Crushing (tertiary)	0	no. of units x	0 ton/hr x	0.00504	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.00	tons/yr	AP-42 Ch.11.19.2
Screening	0	no .of units x	0 ton/hr x	0.0315	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.00	tons/yr	AP-42 Ch.11.19.2
Conveyor Transfer			1,000 ton/hr x	0.00294	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	12.88	tons/yr	AP-42 Ch.11.19.2
Total PM emissions before controls:									169.72	tons/yr	

* * PM emissions after controls * *

Storage	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Transporting	118.64	tons/yr x	50%	emitted after controls =	59.32	tons/yr
Loading & Unloading	38.20	tons/yr x	100%	emitted after controls =	38.20	tons/yr
Crushing (primary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Crushing (secondary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Crushing (tertiary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Screening	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Conveying	12.88	tons/yr x	10%	emitted after controls =	1.29	tons/yr
Total PM emissions after controls:					98.81	tons/yr

* * PM fugitive vs. nonfugitive * *

Storage	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Transporting	118.64	tons/yr x	50%	emitted after controls =	59.32	tons/yr
Loading / Unloading	38.20	tons/yr x	100%	emitted after controls =	38.20	tons/yr
Total PM fugitive emissions:					97.52	tons/yr
Crushing (primary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Crushing (secondary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Crushing (tertiary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Screening	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Conveying:	12.88	tons/yr x	10%	emitted after controls =	1.29	tons/yr
Total PM nonfugitive emissions:					1.29	tons/yr

* * storage * *

Storage PM emissions, which result from wind erosion, are determined by the following calculations:

Ef= 1.7*(s/1.5)*(365-p)/235*(f/15)
= 1.85 lb/acre/day
where s = 1.6 % silt content of material
p = 125 days of rain greater than or equal to 0.01 inches
f = 15 % of wind greater than or equal to 12 mph

Ep (storage) = n)/(43560 sqft/acre)/(25 ft)*(365 day/yr)
0.00 tons/yr
where sc = 0 ,000 tons storage capacity No increase in storage capacity

* * unpaved roads * *

The following calculations determine the amount of PM-10 emissions created by unpaved roads, based on 8760 hours of use and AP-42, Ch 11.2.1.

44.4	trip/hr x		
0.1	mile/trip x		
2	(round trip) x		
8760	hr/yr =	77789	miles per year

Ef =	k*5.9*(s/12)*(S/30)*(W/3)^0.7*(w/4)^0.5*((365-p)/365)	
=	3.05	lb/mile
where k =	0.8	(particle size multiplier)
s =	4.8	% silt content of unpaved roads
p =	125	days of rain greater than or equal to 0.01 inches
S =	10	miles/hr vehicle speed
W =	23.75	tons average vehicle weight
w =	12	wheels

3.05 lb/mi x 77788.8 mi/yr = 118.64 tons/yr
2000 lb/ton

* * aggregate handling * *

The following calculations determine the amount of PM-10 emissions created by truck loading and unloading of aggregate, based on 8760 hours of use and AP-42, Ch 11.2.3.

Ef =	k*(0.0032)* (U/5)^1.3/(M/2)^1.4	
=	0.0087	lb/ton
where k =	0.74	(particle size multiplier)
U =	10	mile/hr mean wind speed
M =	1.5	% material moisture content

Mulzer Crushed Stone, Inc.
Newburgh, Indiana

CP 173-9980
Plt ID 173-00009

PM-10 emissions before control

Storage					** see page 5 **					0.00	tons/yr	AP-42 Ch.11.2.3
Transporting					** see page 6 **					118.64	tons/yr	AP-42 Ch.11.2.1
Loading & Unloading			1,000	ton/hr x	0.0087	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	38.20	tons/yr	AP-42 Ch.11.2.3
Crushing (primary)	0	no. of units x	0	ton/hr x	0.00033	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.00	tons/yr	AP-42 Ch.11.19.2
Crushing (secondary)	0	no. of units x	0	ton/hr x	0.00033	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.00	tons/yr	AP-42 Ch.11.19.2
Crushing (tertiary)	0	no. of units x	0	ton/hr x	0.0024	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.00	tons/yr	AP-42 Ch.11.19.2
Screening	0	no .of units x	0	ton/hr x	0.015	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	0.00	tons/yr	AP-42 Ch.11.19.2
Conveyor Transfer			1,000	ton/hr x	0.0014	lb/ton	/ 2000 lb/ton x	8760	hr/yr =	6.13	tons/yr	AP-42 Ch.11.19.2
Total PM-10 emissions before controls:										162.97	tons/yr	

* * PM-10 emissions after controls * *

Storage	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Transporting	118.64	tons/yr x	50%	emitted after controls =	59.32	tons/yr
Loading & Unloading	38.20	tons/yr x	100%	emitted after controls =	38.20	tons/yr
Crushing (primary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Crushing (secondary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Crushing (tertiary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Screening	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Conveying	6.13	tons/yr x	10%	emitted after controls =	0.61	tons/yr
Total PM-10 emissions after controls:					98.14	tons/yr

* * PM-10 fugitive vs. nonfugitive * *

Storage	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Transporting	118.64	tons/yr x	50%	emitted after controls =	59.32	tons/yr
Loading / Unloading	38.20	tons/yr x	100%	emitted after controls =	38.20	tons/yr
Total PM-10 fugitive emissions:					97.52	tons/yr
Crushing (primary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Crushing (secondary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Crushing (tertiary)	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Screening	0.00	tons/yr x	10%	emitted after controls =	0.00	tons/yr
Conveying:	6.13	tons/yr x	10%	emitted after controls =	0.61	tons/yr
Total PM-10 nonfugitive emissions:					0.61	tons/yr

* * storage * *

Storage PM-10 emissions, which result from wind erosion, are determined by the following calculations:

Ef = 1.7*(s/1.5)*(365-p)/235*(f/15)
= 0.00 lb/acre/day
where s = 1.6 % silt content of material
p = 125 days of rain greater than or equal to 0.01 inches
f = 0.00 % of wind greater than or equal to 12 mph

Ep(storage) = Ef*sc*(40 cuft/ton)/(2000 lb/ton)/(43560 sqft/acre)/(25 ft)*(365 day/yr)
= 0.00 tons/yr
where sc = 0 ,000 tons storage capacity No increase in storage capacity

* * unpaved roads * *

The following calculations determine the amount of PM-10 emissions created by unpaved roads, based on 8760 hours of use and AP-42, Ch 11.2.1.

44.4	trip/hr x		
0.1	mile/trip x		
2	(round trip) x		
8760	hr/yr =	77789	miles per year

Ef = k*5.9*(s/12)*(S/30)*(W/3)^0.7*(w/4)^0.5*((365-p)/365)

=	3.05	lb/mile
where k =	0.8	(particle size multiplier)
s =	4.8	% silt content of unpaved roads
p =	125	days of rain greater than or equal to 0.01 inches
S =	10	miles/hr vehicle speed
W =	23.75	tons average vehicle weight
w =	12	wheels

$$\frac{3.05 \text{ lb/mi} \times 77788.8 \text{ mi/yr}}{2000 \text{ lb/ton}} = 118.64 \text{ tons/yr}$$

* * aggregate handling * *

The following calculations determine the amount of PM-10 emissions created by truck loading and unloading of aggregate, based on 8760 hours of use and AP-42, Ch 11.2.3.

Ef = k*(0.0032)* (U/5)^1.3/(M/2)^1.4

=	0.0087	lb/ton
where k =	0.74	(particle size multiplier)
U =	10	mile/hr mean wind speed
M =	1.5	% material moisture content