

STATE OF MISSOURI

PERMIT BOOK



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 052012-014

Project Number: 2012-01-106
Installation ID: 099-0013

Parent Company: Unimin Corporation

Parent Company Address: 258 Elm Street, New Canaan, CT 06840

Installation Name: Unimin Corporation - Pevely Plant

Installation Address: 2968 Highway Z, Pevely, MO 63070

Location Information: Jefferson County, S21, T41N, R5E

Application for Authority to Construct was made for:

The installation of new rock crushing equipment. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

MAY 22 2012

EFFECTIVE DATE

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Unimin Corporation-Pevely Plant
Jefferson County, S21, T41N, R5E

- 1. Best Management Practices Requirement**
Unimin Corporation - Pevely Plant shall control fugitive emissions from all of the haul roads and vehicular activity areas at this site by performing Best Management Practices as defined in Attachment AA.
- 2. Minimum Distance to Property Boundary Requirement**
The primary emission point, which is the primary crusher (CR-601) shall be located at least 150 feet from the nearest property boundary.
- 3. Record Keeping Requirement**
Unimin Corporation shall maintain all records required by this permit for not less than five years and make them available to any Missouri Department of Natural Resources personnel upon request.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2012-01-106
Installation ID Number: 099-0013
Permit Number:

Unimin Corporation - Pevely Plant
2968 Highway Z
Pevely, MO 63070

Complete: January 30, 2012

Parent Company:
Unimin Corporation
258 Elm Street
New Canaan, CT 06840

Jefferson County, S21, T41N, R5E

REVIEW SUMMARY

- Unimin Corporation has applied for authority to construct a new rock crushing and screening operation in the Pierce tract mining area.
- Hazardous Air Pollutant (HAP) emissions are not expected from the proposed equipment.
- Subpart OOO of the New Source Performance Standards (NSPS) applies to the rock crushing plant.
- None of the National Emissions Standards for Hazardous Air Pollutants (NESHAPS) or the currently promulgated Maximum Achievable Control Technology (MACT) apply to the proposed equipment.
- No control device is being used to control particulate emissions from the proposed equipment. Best Management Practices (BMPs) are being used to control particulate emissions from haul roads and vehicular activity areas.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below the *de minimis* levels.
- The installation is located in Jefferson County, a nonattainment area for the 8-hour ozone and particulate matter less than two-and-a-half microns in diameter (PM_{2.5}) standard and an attainment area for all other criteria air pollutants.
- This installation is not on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2]. However, due to its nonattainment status, the installation's major source

level for volatile organic compounds (VOC), nitrogen oxides (NO_x), and PM_{2.5} is 100 tons per year. For other criteria pollutants, the installation's major source level is 250 tons per year. Fugitive emissions are not counted toward major source applicability.

- An ambient air quality impact analysis (AAQIA) was performed to determine the ambient impact of PM₁₀ from the new crushing operation.
- A modification to its Basic Operating Permit is required for this installation within 30 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Unimin Corporation owns and operates a silica sand mining and processing facility in Pevely, Missouri. The process starts with drilling and blasting of the sandstones. The shot material is then crushed, screened and conveyed to storage piles. From the storage piles, the sand is loaded into a fluid bed dryer. The dryer burner is set up to burn either natural gas or propane. A wet scrubber controls the emissions from the burner and the dryer. The material is then fed into scalping screens where all oversized material is removed. Emissions from the screening operation are controlled by a second wet scrubber.

The material is transported to the screen house where it is separated by eight (8) vibrating screens into different size fractions and grades before being loaded into seven (7) product bins. From the product bins, the material may be loaded directly into haul trucks for delivery or transported to the cooler operation where the temperature of the product is lowered to meet customer specifications. A third wet scrubber controls emissions from the screen house and the loadout spouts. A fourth wet scrubber controls emission from the cooler operation. An additional stage of the process is for a small portion of the material to be hauled from the loadout area to the bagging building where the product is bagged for shipment.

The applicant is using one of the methods described in Attachment AA, "Best Management Practices," to control emissions from haul roads and vehicular activity areas. The following permits have been issued to Unimin Corporation - Pevely Plant from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
0691-014	Installation of silica sand processing equipment
1191-004	Addition of two belt conveyors, three bucket elevators, three 100-ton storage bins and one water-cooled stationary sand cooler
0297-008	Modification of existing belt conveyors
012003-003	Addition of fluid bed dryer
072008-006	Addition of Best Management Practices for the control of haul road and vehicular activity emissions. Updated emission factors.
072008-006A	Correct emission factors
042011-001	Temporary crushing and screening plant
082011-001	New screen and sand handling equipment

PROJECT DESCRIPTION

Unimin Corporation-Pevely plant currently mines the west quarry reserve area. This area will be depleted soon and the plant needs to begin mining the Pierce tract on the east side of the property. The facility proposes to install a new crushing operation on the Pierce tract mining area and pump the material to the existing wash plant. New equipment will include a feeder (FE-601), two crushers (CR-601 and CR-602), two belt conveyors (BC-601 and BC-602) and one wet screen (VS-601). The inherent moisture content of the raw material is greater than 1.5 percent (%) by weight. The existing crushing plant in the west quarry reserve area will operate concurrently with the new equipment during the transition period.

EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition. Emissions from the crushing, screening, and handling equipment were calculated using AP-42, Section 11.19.2, "Crushed Stone Processing and Pulverized Mineral Processing," August, 2004. The controlled emission factors were used because the facility submitted moisture content testing results showing that the inherent moisture content of the raw ore is greater than 1.5% by weight. Emissions from haul roads were calculated using the predictive equation from AP-42, Section 13.2.2, "Unpaved Roads", November 2006. A 90% control efficiency is applied to the particulate matter (PM) and particulate matter less than ten microns in diameter (PM₁₀) emissions calculations and a 40% control efficiency is applied to the PM_{2.5} emissions calculations for the use of BMPs.

The table below summarizes the emissions of this project. The existing potential emissions were taken from Permit 072008-006A and includes emissions from the west quarry crushing plant, the dryer burner, storage pile vehicular activities and haul roads. The existing actual emissions were taken from the previous years' Emissions Inventory Questionnaire (EIQ). The potential emissions of the application represent the emissions from the new crushing operation assuming continuous operation (8760 hours per year).

Table 2: Emissions Summary (tons per year)

Air Pollutant	De Minimis Level/SMAL	^a Existing Potential Emissions	Existing Actual Emissions (2010 EIQ)	Potential Emissions of the Application	Conditioned Potential Emissions
PM	25.0	55.9	N/D	14.79	N/A
PM ₁₀	15.0	8.85	0.72	4.69	N/A
PM _{2.5}	10.0	8.85	0.72	1.94	N/A
SO _x	40.0	0.06	N/D	N/A	N/A
NO _x	40.0	22.14	2.52	N/A	N/A
VOC	40.0	0.59	0.10	N/A	N/A
CO	100.0	0.63	0.63	N/A	N/A
HAPs	10.0/25.0	N/D	N/D	N/A	N/A

N/A = Not Applicable; N/D = Not Determined

^aExisting Potential Emissions taken from Permit 072008-006A.

AMBIENT AIR QUALITY IMPACT ANALYSIS

The Air Pollution Control Program requires an AAQIA for PM₁₀ for all rock-crushing plants regardless of the level of PM₁₀ emissions if a permit is required. The Air Pollution Control Program's quarry nomograph software was used to calculate the 24-hour average concentration of PM₁₀ at the installation's nearest property boundary. A distance of 150 feet was used for the quarry nomograph. The facility plans to move the crushing operation to different locations within the Pierce tract mining area but the primary crusher (CR-601) will be no less than 150 feet from the nearest property boundary. This plant uses BMPs to control emissions from haul roads and vehicular activity areas, so emissions from these sources were not included in the AAQIA. Instead they were addressed as a background concentration of 20.0 µg/m³ of PM₁₀ in accordance with the Air Pollution Control Program's BMPs interim policy.

The facility plans to operate both the existing and the new crushing plant during the transition from the west quarry reserve area to the Pierce tract mining area. The crushing plants are located approximately 3,000 feet from each other and therefore, the PM₁₀ ambient impact contribution from each plant to the other should be minimal. The PM₁₀ ambient impact from the west quarry reserve crushing plant are not included in this AAQIA.

Table 3: AAQIA Results

Pollutant	¹ Modeled Impact	NAAQS	Time Period
PM ₁₀	132.4	150.0	24-hours

Note 1: Includes 20.0 µg/m³ from haul roads and vehicular activities

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below de minimis levels.

APPLICABLE REQUIREMENTS

Unimin Corporation - Pevely Plant shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- 40 CFR 60 Subpart OOO, "Standards of Performance for Nonmetallic Mineral Processing Plants" applies to the equipment.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPS) or National Emission Standards for Hazardous Air Pollutants for Source Categories (MACT) apply to the proposed equipment.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Chia-Wei Young
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated January 4, 2012, received January 30, 2012, designating Unimin Corporation as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Attachment AA: Best Management Practices

Haul roads and vehicular activity areas shall be maintained in accordance with at least one of the following options when the portable plant is operating.

1. Pavement
 - A. The operator shall pave the area with materials such as asphalt, concrete or other materials approved by the Air Pollution Control Program. The pavement will be applied in accordance with industry standards to achieve control of fugitive emissions¹ while the plant is operating.
 - B. Maintenance and repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
 - C. The operator shall periodically wash or otherwise clean all of the paved portions of the haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating.

2. Application of Chemical Dust Suppressants
 - A. The operator shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to unpaved areas.
 - B. The quantities of the chemical dust suppressant shall be applied and maintained in accordance with the manufacturer's recommendation (if available) and in sufficient quantities to achieve control of fugitive emissions from these areas while the plant is operating.
 - C. The operator shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. The operator shall keep these records with the plant for not less than five (5) years and make these records available to Department of Natural Resources personnel upon request.

3. Application of Water-Documented Daily
 - A. The operator shall apply water to unpaved areas. Water shall be applied at a rate of 100 gallons per day per 1,000 square feet of unpaved or untreated surface area while the plant is operating.
 - B. Precipitation may be substituted for watering if the precipitation is greater than one quarter of one inch and is sufficient to control fugitive emissions.
 - C. Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.
 - D. The operator shall record the date, volume of water application and total surface area of active haul roads or the amount of precipitation that day. The operators shall also record the rationale for not watering (e.g. freezing conditions or not operating).
 - E. The operator shall keep these records with the plant for not less than five (5) years, and the operator shall make these records available to Department of Natural Resources personnel upon request.

¹For purposes of this document, Control of Fugitive Emissions means to control particulate matter that is not collected by a capture system and visible emissions to the extent necessary to prevent violations of the air pollution law or regulation. (Note: control of visible emission is not the only factor to consider in protection of ambient air quality.)

Mr. Daniel Rowe
Plant Manager
Unimin Corporation - Pevely Plant
2968 Highway Z
Pevely, MO 63070

RE: New Source Review Permit - Project Number: 2012-01-106

Dear Mr. Rowe:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Chia-Wei Young, at the department's Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, or by telephone at (573) 751-4817. Thank you for your time and attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:cyk

Enclosures

c: St. Louis Regional Office
PAMS File: 2012-01-106