

# RULE 13-2937 PERMIT MODIFICATION

RHODES BRICK & BLOCK COMPANY

RED HOUSE, WEST VIRGINIA PLANT  
PLANT ID NO. 079-00170

Id. No. 079-00170 Reg. R13-2937A  
Company Rhodes Brick & Block Company  
PREPARED FOR Facility Red house Region 4  
Initials JEM

RHODES BRICK & BLOCK COMPANY  
ST. ALBANS, WEST VIRGINIA

PREPARED BY:

ENVIRONMENTAL REGULATORY COMPLIANCE CONSULTANCY, LLC  
1 Bendcrest Place  
Charleston, WV 25314

ERCC PROPOSAL NUMBER 0002-0-05-2015

August 2015

*Entire Document*  
NON-CONFIDENTIAL

**ENVIRONMENTAL REGULATORY COMPLIANCE CONSULTANCY, LLC**

**dba ERCC, LLC**

*"Protecting your bottom line is our #1 priority."*

ERCC Project No. 0002-05-2015

August 12, 2015

W. Frederick Durham, Director  
WVDEP - Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, West Virginia 25304

RE: R13-2937 Modification Application for the  
inclusion of a Wholesale Marketing  
Operation Specializing in the Sale of Off-  
site Sized Limestone and Sand Products

**HAND DELIVERED**

Dear Director:

Environmental Regulatory Compliance Consultancy, LLC (ERCC) has prepared the attached After-the-Fact Rule 13 Permit Modification Application on behalf of Rhodes Trucking Corporation dba Rhodes Brick & Block Company (Rhodes). Rhodes constructed three (3) of six proposed rectangular shaped open-ended and open-topped product storage units and installed truck scales at their Red House, WV facility before realizing a permit was required prior to the commencement of construction. Rhodes voluntarily ceased construction activities and shortly thereafter provided ERCC with the opportunity to do the permitting work. .

The proposed wholesale operation is nothing more than a materials handling operation without any crushing, screening feeders, hoppers or conveyor belts. Sized limestone and sand products will be purchased from independent vendors and delivered to the Red House facility. Once a sale is made, the material is recovered from the appropriate storage unit, loaded into a truck, and delivered to the customer.

The public notice has been delivered to the Charleston Gazette-Mail office and is scheduled to be published on Wednesday, August 12, 2015. As soon as the publication affidavit becomes available, it will be hand delivered to your office.

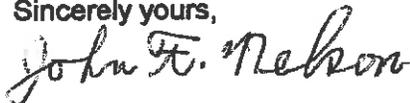
If, during your administrative or technical review processes, deficiencies are noted, please send ERCC a copy of the deficiency notice in addition to Rhodes being sent a notice. Such an action will be very much appreciated by Rhodes. The contact information is as follows:

W. Leonard Womble, MinE  
[LWomble@gmail.com](mailto:LWomble@gmail.com)  
304.533.6059 (cell no.)

John F. Nelson, PE  
[JFNEDN@aol.com](mailto:JFNEDN@aol.com)  
304.542.3540 (cell no.)

Thank you in advance for your assistance, Director Durham.

Sincerely yours,



John F. Nelson, P.E.



cc: Mr. Rick Rhodes

WV DEP-DAQ Enclosures  
One Hardcopy Application  
Two Compact Disc

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**NOTE:** Attachments intentionally omitted are as follows:

- M: Air Pollution Control Device Sheet(s)
- Q: Business Confidential Claims
- R: Authority Forms
- S: Title V Permit Revisions Information

**SECTION 01**

**PERMIT R13-2937 MODIFICATION APPLICATION  
FORM**



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**DIVISION OF AIR QUALITY**  
 601 57<sup>th</sup> Street, SE  
 Charleston, WV 25304  
 (304) 926-0475  
[www.dep.wv.gov/dag](http://www.dep.wv.gov/dag)

**APPLICATION FOR NSR PERMIT  
 AND  
 TITLE V PERMIT REVISION  
 (OPTIONAL)**

PLEASE CHECK ALL THAT APPLY TO NSR (45CSR13) (IF KNOWN):  
 CONSTRUCTION     MODIFICATION     RELOCATION  
 CLASS I ADMINISTRATIVE UPDATE     TEMPORARY  
 CLASS II ADMINISTRATIVE UPDATE     AFTER-THE-FACT

PLEASE CHECK TYPE OF 45CSR30 (TITLE V) REVISION (IF ANY):  
 ADMINISTRATIVE AMENDMENT     MINOR MODIFICATION  
 SIGNIFICANT MODIFICATION  
 IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS ATTACHMENT S TO THIS APPLICATION

**FOR TITLE V FACILITIES ONLY:** Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

**Section I. General**

1. Name of applicant (as registered with the WV Secretary of State's Office):  
*Rhodes Trucking Corporation dba Rhodes Brick & Block Company*

2. Federal Employer ID No. (FEIN):  
*550536067*

3. Name of facility (if different from above):

4. The applicant is the:  
 OWNER     OPERATOR     BOTH

5A. Applicant's mailing address:  
*107 Industrial Road  
 St. Albans, WV 25117*

5B. Facility's present physical address:  
*11657 Charleston Road (State Rt. 62)  
 Red House, WV 25168*

6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia?     YES     NO  
 - If YES, provide a copy of the Certificate of Incorporation/Organization/Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A.  
 - If NO, provide a copy of the Certificate of Authority/Authority of L.L.C./Registration (one page) including any name change amendments or other Business Certificate as Attachment A.

7. If applicant is a subsidiary corporation, please provide the name of parent corporation:

8. Does the applicant own, lease, have an option to buy or otherwise have control of the proposed site?     YES     NO  
 - If YES, please explain:    *Own*  
 - If NO, you are not eligible for a permit for this source.

9. Type of plant or facility (stationary source) to be constructed, modified, relocated, administratively updated or temporarily permitted (e.g., coal preparation plant, primary crusher, etc.):  
*Construction of a materials handling facility (no crushing or screening) for the purpose of wholesale marketing of pre-sized limestone and sand purchased from independent suppliers.*

10. North American Industry Classification System (NAICS) code for the facility:  
*327331 (Concrete block and brick manufacturing);  
 423320 (Brick, stone, and related construction merchant wholesalers.)*

11A. DAQ Plant ID No. (for existing facilities only):  
*079-00170*

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):  
*R13-2937*

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

12A.

- For **Modifications, Administrative Updates** or **Temporary permits** at an existing facility, please provide directions to the *present location* of the facility from the nearest state road;
- For **Construction** or **Relocation permits**, please provide directions to the *proposed new site location* from the nearest state road. Include a **MAP** as **Attachment B**.

*Proceed north, from the Poca, WV Volunteer Fire Station, on State Route 62, for approximately 6.7 miles. The facility is on the left.*

12.B. New site address (if applicable):

12C. Nearest city or town:  
*Red House*

12D. County: *Putnam*

12.E. UTM Northing (KM): *42 66 528*

12F. UTM Easting (KM): *04 23 478*

12G. UTM Zone: *17*

13. Briefly describe the proposed change(s) at the facility:

This permit modification addresses the following:

- (1) The crusher, Emission Unit ID number CRS-1, was never installed and Rhodes wishes to remove it from the R13-2937 permit
- (2) Emission Unit ID number T-1, a 2,000 gallon off-road diesel fuel tank was, on July 29, 2014, replaced with a 1,000 gallon tank, i.e., T-3.
- (3) The speed limit for all vehicles and equipment has been posted at 3 miles per hour. In Section 03 there is a copy of a letter signed by the vice president of Rhodes Brick & Block Company addressing the reduced speed limit on Plant roadways. Photos of the speed limit signs displayed at the entrance to the facility are also included.
- (4) The fundamental purpose of this permit modification application is the installation of a wholesale sales area for the marketing of various sizes of limestone and sand, i.e., 1/2"x0", 1-1/2"x0", #3s, #4s, #57s, #57 gravel, concrete sand and masonry sand.
- (5) The delivered materials to the facility will be stored in a series of six (6) rectangular shaped open-end open-top stockpile storage units (storage cells).
- (6) Three (3) of the storage cells, i.e., E3-6 thru E3-8, were constructed during the first quarter of 2015. Truck scales were also installed during the same time period.
- (7) The three (3) remaining storage cells, i.e., E3-9 thru E3-11, will be constructed after this modified permit has been issued but no later than December 31, 2016.
- (8) The block and precast concrete manufacturing process authorized under R13-2937 will not be physically altered during the operation of this wholesale sales outlet.
- (9) The increase in emissions due to the projected increase in the diesel fuel from Emission Unit ID T-3 have been accounted for in this modification application.
- (10) All projected fugitive dust emissions associated with the receipt, storage and shipping of the products mentioned above have been incorporated in the recalculation of all plant-wide emissions.

14A. Provide the date of anticipated installation or change:

If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: *E3-6, E3-7 and E3-8 were constructed in March 2015. Truck scales were also installed in March 2015. Construction of E3-9, E3-10 and E3-11 will take place during the time frame between one day after the approval and effective date of this permit modification and December 31, 2015.*

14B. Date of anticipated Start-Up if a permit is granted:

*One day after issuance of the modified permit.*

14C. Provide a **Schedule** of the planned **Installation of/Change to and Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved).

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:

Hours Per Day: *10* Days Per Week: *6* Weeks Per Year: *50*

16. Is demolition or physical renovation at an existing facility involved?  YES  NO

17. **Risk Management Plans.** If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see [www.epa.gov/ceppo](http://www.epa.gov/ceppo)), submit your **Risk Management Plan (RMP)** to U. S. EPA Region III.

18. **Regulatory Discussion.** List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (*if known*). A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance (*if known*). Provide this information as **Attachment D**.

## **Section II. Additional attachments and supporting documents.**

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR22 and 45CSR13).

20. Include a **Table of Contents** as the first page of your application package.

21. Provide a **Plot Plan**, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as **Attachment E** (Refer to **Plot Plan Guidance**).

– Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F**.

23. Provide a **Process Description** as **Attachment G**.

– Also describe and quantify to the extent possible all changes made to the facility since the last permit review (*if applicable*).

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H**.

– For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I**.

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J**.

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K**.

28. Check all applicable **Emissions Unit Data Sheets** listed below:

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Bulk Liquid Transfer Operations | <input checked="" type="checkbox"/> Haul Road Emissions | <input type="checkbox"/> Quarry   |
| <input type="checkbox"/> Chemical Processes              | <input type="checkbox"/> Hot Mix Asphalt Plant          | <input checked="" type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities |
| <input type="checkbox"/> Concrete Batch Plant            | <input type="checkbox"/> Incinerator                    | <input checked="" type="checkbox"/> Storage Tanks   |
| <input type="checkbox"/> Grey Iron and Steel Foundry     | <input type="checkbox"/> Indirect Heat Exchanger        |   |
| <input type="checkbox"/> General Emission Unit, specify  |   |   |

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L**.

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Absorption Systems        | <input type="checkbox"/> Baghouse                   | <input type="checkbox"/> Flare                 |
| <input type="checkbox"/> Adsorption Systems        | <input type="checkbox"/> Condenser                  | <input type="checkbox"/> Mechanical Collector  |
| <input type="checkbox"/> Afterburner               | <input type="checkbox"/> Electrostatic Precipitator | <input type="checkbox"/> Wet Collecting System |
| <input type="checkbox"/> Other Collectors, specify |   |  |

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M**.

30. Provide all **Supporting Emissions Calculations** as **Attachment N**, or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O**.

➤ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and *Example Legal Advertisement* for details). Please submit the **Affidavit of Publication as Attachment P** immediately upon receipt.

33. **Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

YES  NO

➤ If YES, identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's "Precautionary Notice - Claims of Confidentiality" guidance found in the *General Instructions as Attachment Q*.

### Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable Authority Form below:

- Authority of Corporation or Other Business Entity  Authority of Partnership  
 Authority of Governmental Agency  Authority of Limited Partnership

Submit completed and signed Authority Form as Attachment R.

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

#### Certification of Truth, Accuracy, and Completeness

I, the undersigned  **Responsible Official** /  **Authorized Representative**, hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

#### Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE Richard L. Rhodes DATE: 8-11-15  
(Please use blue ink) (Please use blue ink)

35B. Printed name of signee: <i>Richard L. Rhodes</i>		35C. Title: <i>Vice President</i>
35D. E-mail: <i>rick@rhodesblock.com</i>	36E. Phone: <i>1-304-586-9000</i>	36F. FAX: <i>1-304-586-9002</i>
36A. Printed name of contact person (if different from above):		36B. Title:
36C. E-mail:	36D. Phone:	36E. FAX:

#### PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Attachment A: Business Certificate               | <input checked="" type="checkbox"/> Attachment K: Fugitive Emissions Data Summary Sheet            |
| <input checked="" type="checkbox"/> Attachment B: Map(s)                             | <input checked="" type="checkbox"/> Attachment L: Emissions Unit Data Sheet(s)                     |
| <input checked="" type="checkbox"/> Attachment C: Installation and Start Up Schedule | <input type="checkbox"/> Attachment M: Air Pollution Control Device Sheet(s)                       |
| <input checked="" type="checkbox"/> Attachment D: Regulatory Discussion              | <input checked="" type="checkbox"/> Attachment N: Supporting Emissions Calculations                |
| <input checked="" type="checkbox"/> Attachment E: Plot Plan                          | <input checked="" type="checkbox"/> Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans |
| <input checked="" type="checkbox"/> Attachment F: Detailed Process Flow Diagram(s)   | <input checked="" type="checkbox"/> Attachment P: Public Notice                                    |
| <input checked="" type="checkbox"/> Attachment G: Process Description                | <input type="checkbox"/> Attachment Q: Business Confidential Claims                                |
| <input checked="" type="checkbox"/> Attachment H: Material Safety Data Sheets (MSDS) | <input type="checkbox"/> Attachment R: Authority Forms   |
| <input checked="" type="checkbox"/> Attachment I: Emission Units Table               | <input type="checkbox"/> Attachment S: Title V Permit Revision Information                         |
| <input checked="" type="checkbox"/> Attachment J: Emission Points Data Summary Sheet | <input checked="" type="checkbox"/> Application Fee  |

**Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.**

**FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:**

- Forward 1 copy of the application to the Title V Permitting Group and:**
- For Title V Administrative Amendments:**
  - NSR permit writer should notify Title V permit writer of draft permit,**
- For Title V Minor Modifications:**
  - Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,**
  - NSR permit writer should notify Title V permit writer of draft permit.**
- For Title V Significant Modifications processed in parallel with NSR Permit revision:**
  - NSR permit writer should notify a Title V permit writer of draft permit,**
  - Public notice should reference both 45CSR13 and Title V permits,**
  - EPA has 45 day review period of a draft permit.**

**All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.**

**SECTION 02**

**ATTACHMENTS**

**ATTACHMENT 02 - A**

**BUSINESS CERTIFICATE**

**WEST VIRGINIA  
STATE TAX DEPARTMENT  
BUSINESS REGISTRATION  
CERTIFICATE**

**ISSUED TO:  
RHODES TRUCKING CORPORATION  
DBA RHODES BRICK & BLOCK COMPANY  
11657 CHARLESTON RD  
REDHOUSE, WV 25168-0000**

**BUSINESS REGISTRATION ACCOUNT NUMBER: 2268-5626**

**This certificate is issued on: 03/30/2012**

*This certificate is issued by  
the West Virginia State Tax Commissioner  
in accordance with Chapter 11, Article 12, of the West Virginia Code*

*The person or organization identified on this certificate is registered  
to conduct business in the State of West Virginia at the location above.*

**This certificate is not transferrable and must be displayed at the location for which issued.**

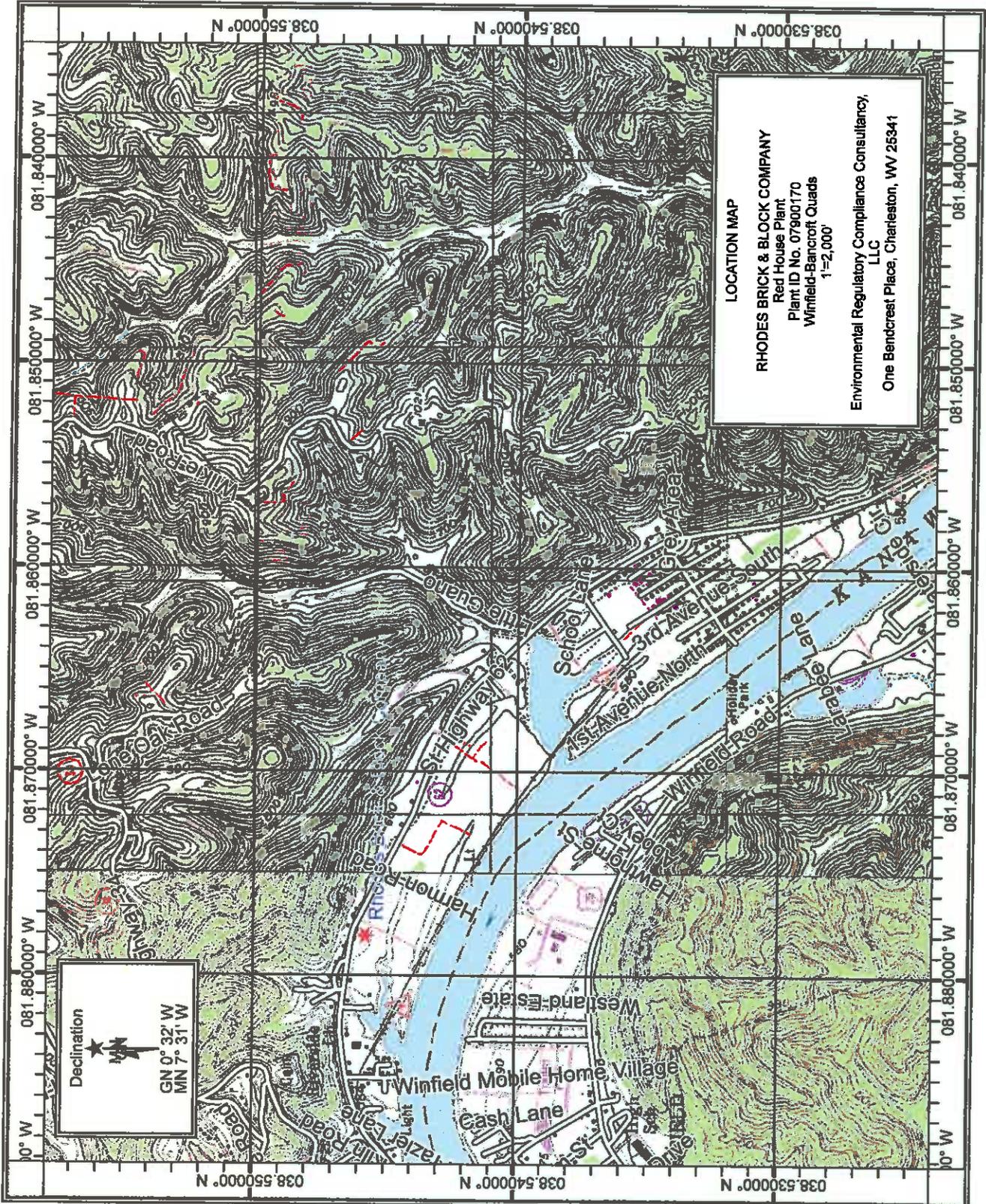
**This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.**

**Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.**

**TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.  
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of  
this certificate displayed at every job site within West Virginia.**

**ATTACHMENT 02 - B**

**LOCATION MAP**



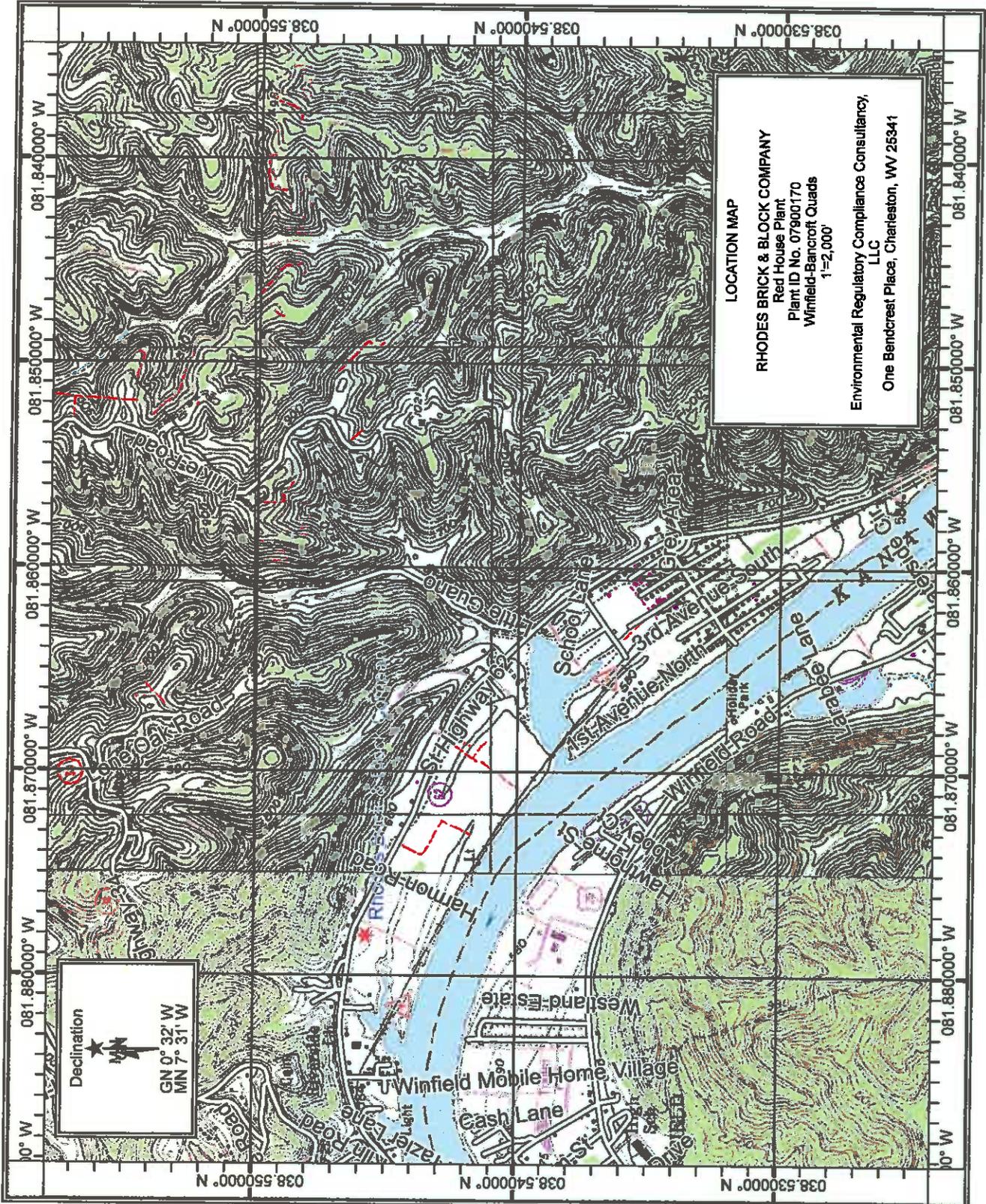
**LOCATION MAP**

**RHODES BRICK & BLOCK COMPANY**  
 Red House Plant  
 Plant ID No. 07900170  
 Winfield-Bancroft Quads  
 1"=2,000'

Environmental Regulatory Compliance Consultancy,  
 LLC  
 One Bancroft Place, Charleston, WV 25341

Declination

GN 0° 32' W  
 MN 7° 31' W



**ATTACHMENT 02 - C**

**INSTALLATION AND START UP SCHEDULE**

## **INSTALLATION AND STARTUP SCHEDULE**

### **A. Concrete Block & Brick Manufacturing (NAICS Code 327331)**

- The permitted 2,000 gallon diesel fuel storage tank (T-1) was replaced on July 29, 2014 with a 1,000 gallon capacity tank.
- The crusher (CRS-1) was never installed and is being removed from the R13-2937 with this modification.
- This modification adds 180 feet of paved haulroad consisting of 100 linear feet of concrete at the intersection of the plant entrance and State Rt. 62 and a set of truck scales measuring 60' in length with a 10' long concrete approach pad at each end.

### **B. Proposed Wholesaling of Pre-Sized Limestone and Sand Products (NAICS Code 423320)**

- Three (3) bulk storage units, i.e., E3-6, E3-7 and E3-8, were constructed in March 2015 and currently contain limited amounts of off-site purchased pre-sized materials.
- Truck scales were installed in March, 2015.
- Three (3) additional bulk storage units, i.e., E3-9, E3-10 and E3-11 will be constructed between the effective date of the approval of this modification application and December 31, 2015.
- E3-6, E3-7 and E3-8, in conjunction with the truck scales, will begin being used to supply the local wholesale market with sand and/or pre-sized limestone products within one day after this modification application becomes effective.

**ATTACHMENT 02 - D**

**REGULATORY DISCUSSION**

## REGULATORY DISCUSSION

### Introduction

The wholesale activities, which Rhodes Brick & Block Company (Rhodes) plans to establish within the fence line of their Red House block and pre-cast concrete operation, authorized under R13-2937(issued and effective on the same date, i.e., October 15, 2012), will initially include one or more of the following limestone and sand products. This list of potential products is not all inclusive and thus not intended to place any limitation on other off-site sized aggregate that Rhodes can legally sell at any time of their choosing in the future.

- (1) ½"x0"
- (2) 1-1/2"x0"
- (3) #3s,
- (4) #4s,
- (5) #57s,
- (6) #57 gravel,
- (7) Concrete sand
- (8) Masonry sand.

All products purchased by Rhodes for resale will be purchased from independently owned and operated businesses who have no financial and/or operational ties to Rhodes. The purchased sized materials will be delivered by truck to the Red House facility.

This wholesale marketing effort will not include any crushing, grinding, sizing, or resizing of the purchased product prior to its resale from the Red House Plant.

The increased use of off-road diesel fuel from Tank 2 (Emission Unit ID T-2; Emission Point ID E-4) for the rubber-tired front-end loader are accounted for in revised tank emission calculations.

### Particulate Matter Generation

All particulate matter generated by, or incidental to the wholesale sales operation proposed herein, that are legally required to be accounted for, are addressed. These activities are:

- (a) Loaded and empty trucks traveling on both paved and unpaved plant roadways.
- (b) The process of trucks dumping load into one of six individual stockpile storage units (storage cells).
- (c) Stockpile volume consolidation management utilizing the Komatsu WA200-5A wheel loader. As the material is discharged from the elevated dump body it is spread out over the concrete pad's surface as the truck pulls out of the storage

cell. The wheel loader will be use<sup>d</sup> to push the scattered product back to the main body of the stockpile.

- (d) The loading of a truck with a product, using the wheel loader, for delivery to a customer.
- (e) Wind erosion of stockpiles.

Each of the six (6) individual stockpile storage units will be three-sided, have an open top and a single open end, and are, or will be, constructed of reinforced block. The reinforced concrete pad is approximately 6" thick.

On an as-needed basis the roadway, both paved and unpaved, the truck loading area, and the dumping and stacking of the delivered load into the stockpile storage unit, will be treated with water for the control of fugitive dust emissions. The exposed surface areas of the stockpiled materials will also be treated, on an as-need basis, with water to control fugitive emissions created by wind erosion.

### **VOC Emissions**

With the additional utilization of the Komatsu wheel loader to service the needs of the wholesale sales yard area, there will be an increase in the number of "filling-emptying cycles" for the off-road diesel fuel storage tank. Accordingly, the annual VOC emissions will increase. This increase in emissions has been accounted for.

It is the opinion of Environmental Regulatory Compliance Consultancy, LLC that the activities associated with the receipt, storage, and sale of the activities proposed for the retail yard will be subject to the following rules:

### **Federal and State Enforcement Authority**

- 45CSR8                    *Ambient Air Quality Standards*  
Effective Date: June 1, 2014
  
- 45CSR13                *Permits For Construction, Modification, Relocation And Operation Of Stationary Sources Of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits And Procedures For Evaluation*  
Effective Date: June 1, 2009
  
- 45CSR30                *Operating Permit Requirements*  
Effective Date: May 1, 2015

### **State Only Enforcement Authority**

- 45CSR4                    *To Prevent and Control the Discharge of Air Pollutants Into the Open Air Which Causes or Contributes to an Objectionable Odor or Odors*

Effective Date: October 1, 1967

45CSR16

*Standards of Performance for New Stationary Sources*

Effective Date: June 1, 2015

45CSR17

*To Prevent and Control Particulate Matter Air Pollution From Materials Handling, Preparation, Storage, and Other Sources of Fugitive Particulate Matter*

August 31, 2000

45CSR22

*Air Quality Management Fee Program*

Effective Date: Unknown

**ATTACHMENT 02 - E**

**PLOT PLAN**

**Wholesale Sales Marketing Area**

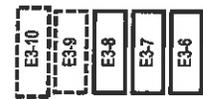
**Calhoun Engineering & Surveying Boundary Survey**

360' to Umberger property line from security fence

NOTE: CRS1 is, as a part of this Modification, being removed from the process flow diagram. As of this date, 06.30.2015, CRS1 has never been installed and there are currently no plans to install it. However, unless directed by the WV DEP's DAQ, it will remain in storage at its present location until such time as it is disposed of.

Reference Coordinates  
 17-0423490 E  
 4266539 N  
 NAD 27

WHOLESALE SALES



Yard Limit

Truck Scales

Unpaved

BLOCK

AND

PRECAST

CONCRETE

STORAGE

AREA

Approximate location of gate

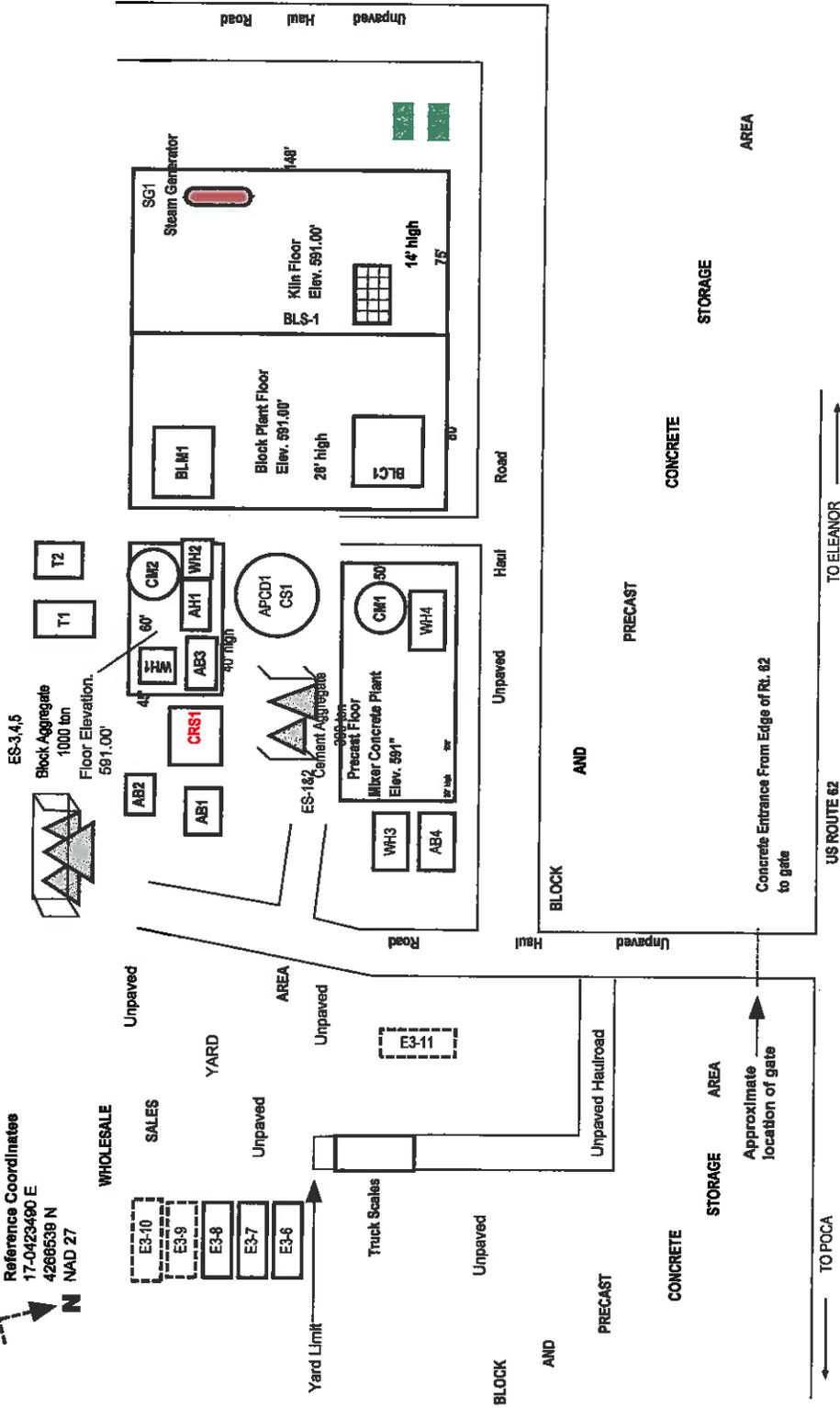
TO POCA

NOTES: 01. Dashed line indicates To Be Constructed

02. Ingress and egress to the Wholesale Sales area, "Yard Limit" from WV Rt. 62 is approximately 500'. Of this distance, approximately 180' is paved and the remaining 320' is unpaved.



320' to Gibson property line from security fence



TO ELEANOR

US ROUTE 62

NOTES: 01. Dashed line indicates To Be Constructed

02. Ingress and egress to the Wholesale Sales area, "Yard Limit" from WV Rt. 62 is approximately 500'. Of this distance, approximately 180' is paved and the remaining 320' is unpaved.

**PLOT PLAN**

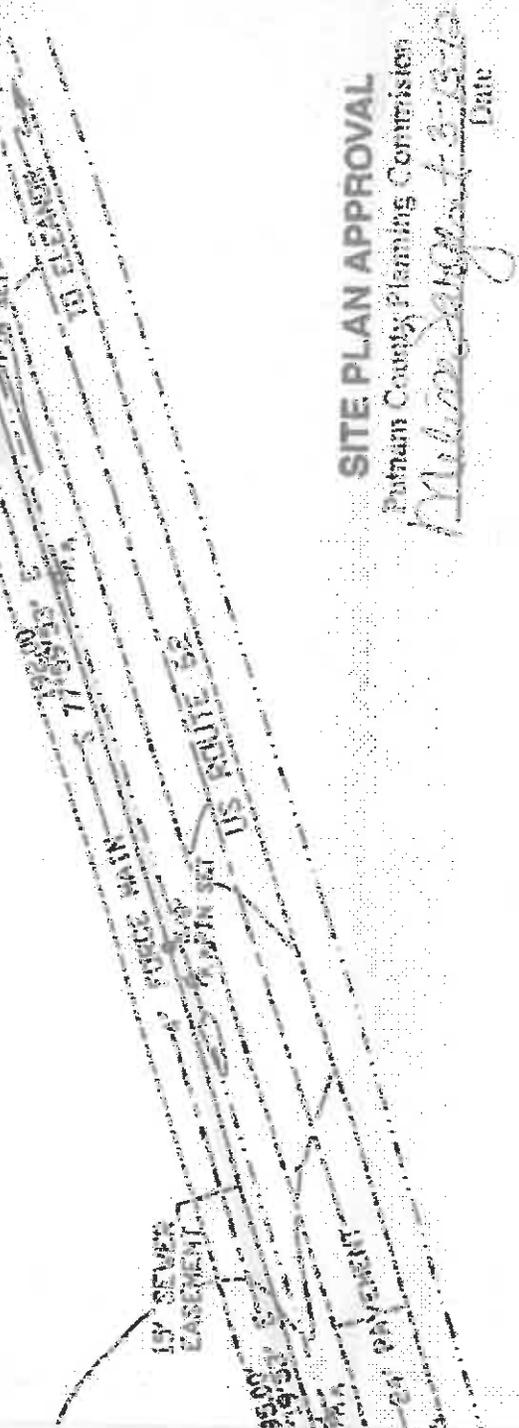
Rhodes Brick & Block Company  
 Red House, WV

Plant ID No. 07900170

Revised By: WLW - Checked By: JFN, P.E. - Project No. 0002-0-05-2015 - July, 2015  
 (Original Plot Plan Prepared by ERSG Under Project No. 12-121-03 - May 2012)

Not To Scale

Environmental Regulatory Compliance Consultancy, LLC  
 One Bendcrest Place - Charleston, WV - 25341



**SITE PLAN APPROVAL**

Putnam County Planning Commission

*M. Williams*  
Date

MAP SHOWING  
A 2.70 ACRE

MANUFACTURING SITE  
TRACT ONE - 16.49 ACRES  
PROPERTY OF

**RHODES TRUCKING COMPANY**  
**D/B/A RHODES BRICK AND BLOCK COMPANY**

11657 CHARLESTON ROAD  
RED HOUSE, WV 25168

DB 512, P - 274

TM 174, PAR. 20, 77, 78

AND TM 174-A, PAR. 19

UNION DISTRICT - PUTNAM COUNTY

WEST VIRGINIA

FEBRUARY 10, 2012

1. Cement Silo (C-5-20) (APCD-1)

2. Block Plant Mixer (Cm-1) (WH2)

3. Aggregate Bin (AB3) (WH1)

Block Machine (BM1)

Transfer Hopper (AB2)

Trasfer Hopper (AB1)

Steam Generator

Mixer Concrete Plant (Cm-2)

Aggregate Bin (AB4) (WH3)

Fence and Picketry lines

CALHOUN ENGINEERING & SURVEYING

FERRIGANE, WV

PROPERTY IS LOCATED AT

11657 CHARLESTON ROAD

RED HOUSE, WV 25168

P. E. 4782

P. S. 1011

SCALE: 1 INCH = 60 FEET

This document was too large to scan. If interested in viewing please contact: [depfoia@wv.gov](mailto:depfoia@wv.gov) or

West Virginia Department of Environmental Protection Public Information Office

FOIA Request

601 57th St. S.E.

Charleston, WV 25304.

The fax number is 304-926-0447.

Thank you.



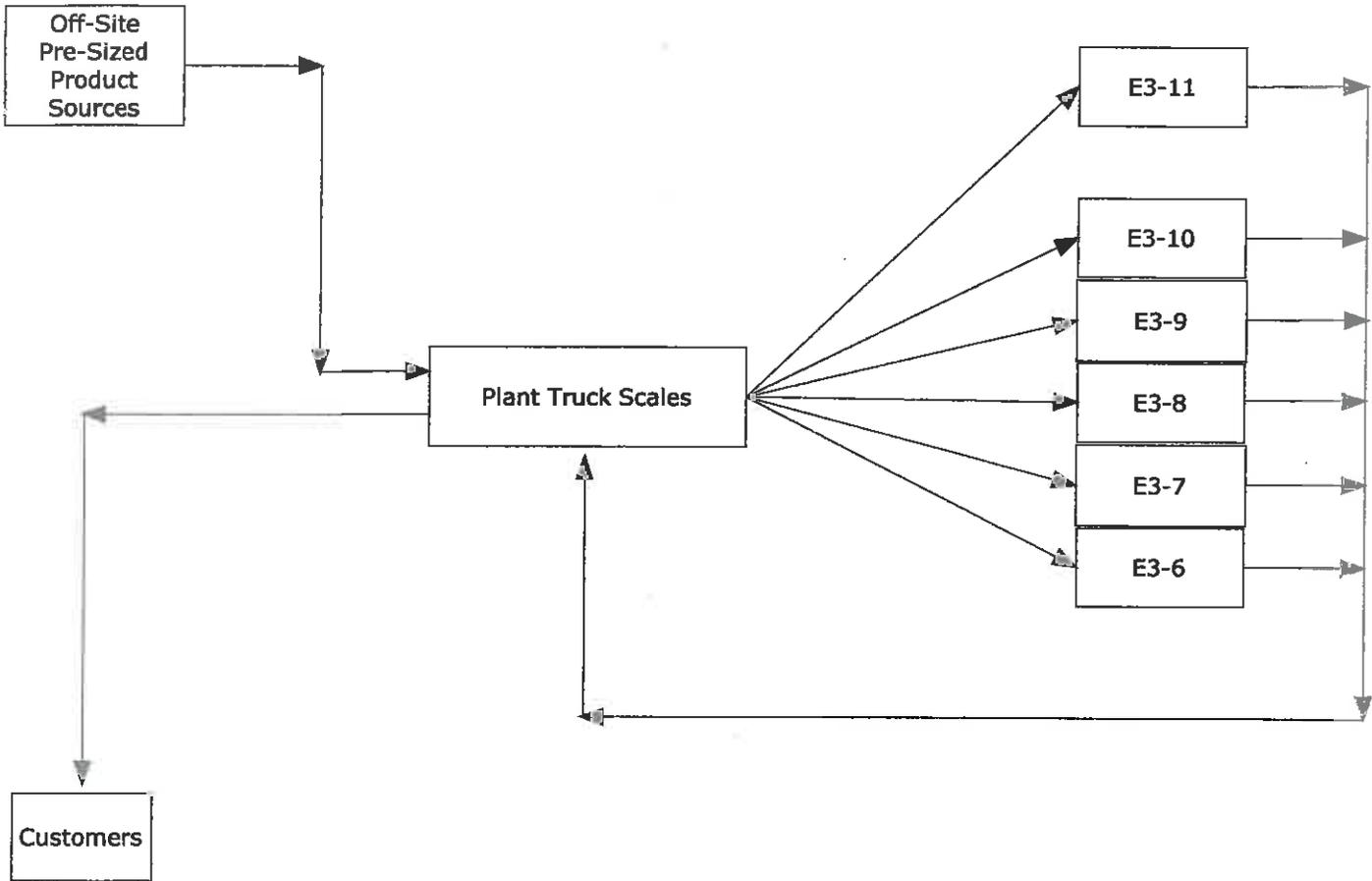
west virginia department of environmental protection

**ATTACHMENT 02 - F**

**PROCESS FLOW DIAGRAM**

**Wholesale Sales Area Addition**

**RHODES BRICK & BLOCK - RED HOUSE PLANT  
PROCESS FLOW DIAGRAM - WHOLESALE SALES ADDITION**



**PROCESS FLOW DIAGRAM**  
Rhodes Brick & Block Company  
Red House, WV  
Plant ID No. 07900170  
Revised By: WLW - Checked By: JFN, P.E. - Project No. 0002-0-05-2015 - June 2015  
Not To Scale  
**Environmental Regulatory Compliance Consultancy, LLC**  
One Bendcrest Place - Charleston, WV - 25341  
July 2015

**ATTACHMENT 02 - G**

**PROCESS DESCRIPTION**

**Wholesale Sales Area Addition**

## PROCESS DESCRIPTION

### WHOLESALE SALES ADDITION FOR LIMESTONE AND SAND

#### I. RECEIPT AND STORAGE OF A PRE-SIZED MARKET-READY PRODUCTS

##### A. STEP NO. 01: PRE – SIZED MARKET - READY PRODUCTS DELIVERED TO THE FACILITY

- Pre-sized market-ready products, purchased from independently owned and operated entities, will be purchased and delivered to the Red House facility via truck:

##### Limestone

½"x0"

1-1/2"x0"

#3s

#4s

#57s

#57 Gravel

##### Sand

Concrete Sand

Masonry Sand

##### B. STEP NO. 02 WEIGHT OF LOADED TRUCK DETERMINED

- Delivery truck will be weighed.

##### C. STEP NO. 03 STORAGE OF MARKET - READY PRODUCT

- Storage Unit ES-06 will be stocked with a pre-sized limestone product.
- Storage Unit ES-07 will be stocked with a pre-sized limestone product.
- Storage Unit ES-08 will be stocked with a pre-sized limestone product.
- Storage Unit ES-09 will be stocked with a pre-sized limestone product.
- Storage Unit ES-10 will be stocked with a pre-sized limestone product.
- Storage Unit ES-11 will be stocked with concrete or with a sand product.

##### D. STEP NO. 04 WEIGHT OF EMPTY TRUCK DETERMINED

- Empty truck will be weighed

##### E. STEP NO. 05 STOCKPILE UNIT VOLUME MANAGEMENT

After each load is dumped into the designated storage unit, the wheel loader will be used to stack the load within the designated limits of the working volume of the unit. The purposes of defining the limits of the working volume are as follows:

- The minimization of the likelihood of cross-contamination of two dissimilar products stored in adjacent storage units having a common wall.
- The minimization of spillage (wasted salable material) over the closed end of the storage unit.
- Having a reasonably consistent height of the top of the stockpile extending above the top of the three walls defining the storage unit.
- Controlling the surface area of the exposed surface of the stockpile material
- Eliminating the likelihood of salable product extending beyond the vertical plain of the open end storage unit and posing a safety issue for employees and others who may be present in area ("yard area") where equipment is active.

The factors used to define the limits of the working volume of the stockpile units are:

- Maintaining a 12" freeboard along each of the three retaining walls of the storage unit.
- Utilizing the stored material's angle of repose to maintain the toe of the slope of the stored in close proximity to the freeboard line along each of the three sides of the storage cell.
- Utilizing the stored materials angle of repose to keep the toe of the slope of the stored material from extending beyond the vertical plane formed by the ends of the two walls at the open end of the storage cell.

## **II. SALE OF MARKET - READY PRODUCT**

### **A. STEP NO. 01 WEIGHT OF EMPTY TRUCK DETERMINED**

- Empty truck will be weighed.

### **B. STEP NO. 02 LOADING OF MARKET-READY PRODUCT SOLD**

- The Komatsu wheel loader (Model WA200-5) rubber-tired loader will load the empty truck.

### **D. STEP NO. 03 LOADED TRUCK IS WEIGHED**

- The loaded truck will be weighed prior to the product leaving the facility for deliver to the consumer.

### **E. STEP NO. 04 LOADED TRUCK EXITS FACILITY**

- Loaded truck exits the facility to deliver the load to the consumer.

# **ATTACHMENT 02 - H**

## **MATERIAL SAFETY DATA SHEETS**

**H-1 Lehigh Hanson (Hanson Aggregates) - Limestone**

**H-2 Letart Corporation – Natural Sand & Gravel**

**H-3 Marathon Petroleum**

**Highway Use Diesel**

**Off-Road Use Diesel**

**H-4 Martin Marietta Materials**

**Limestone - Crushed**

**Natural Sand & Gravel**

**LETART CORPORATION**  
**SAND & GRAVEL**  
**MATERIAL SAFETY DATA SHEET**

**Identity:** Natural Sand & Gravel

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**SECTION I**

**Manufacturer's Name**  
Letart Corporation Sand & Gravel

**Emergency Phone Number**  
1-304-675-7516

**Address**  
PO Box 69  
Gallipolis Ferry, WV 25515

**Telephone Number for Information**  
1-304-675-7516

**Date of Preparation**  
05/05/99

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**SECTION II – HAZARDOUS INGREDIENTS / IDENTITY INFORMATION**

**HAZARDOUS COMPONENTS**

Silica, Crystalline Quartz (respirable)

**SPECIFIC CHEMICAL IDENTITY:** Silicon Dioxide SiO<sub>2</sub> (CAS 14808-60-7)

**COMMON NAMES:** Silica, Flint, Sand, Gravel, Crystalline Free Silica, Quartz, Gravel

**OSHA PEL:** Exposure to airborne crystalline silica shall not exceed an 8-hour time weighed average limit  
As stated in 29 CFR 1910.1000 Table Z-1-A, Air Contaminants, specifically:

3  
Silica, Crystalline Quartz (respirable) 0.1 mg/M

**ACGIH TLV:** Crystalline Quartz 3  
TLV-TWA = 0.1 mg/M (Respirable Dust)  
See Threshold Limit Value and Biological Exposure Indices for 1991-1992  
American Conference of Governmental Industrial Hygienists.

**OTHER LIMITS RECOMMENDED:** National Institute for Occupational Safety and Health (NIOSH).  
Recommended standard maximum permissible concentration = 0.05 mg/cubic Meter (respirable free silica)  
as determined by a full shift sample up to 10-hour working day, 40-hour work week. See NIOSH Criteria  
for a Recommended Standard Occupational Exposure to Crystalline Silica.

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**SECTION III – PHYSICAL / CHEMICAL CHARACTERISTICS**

**Boiling Point:** 4046 F<sup>0</sup>  
**Vapor Pressure (mm HG)** None  
**Vapor Density (Air = 1)** None

**Specific Gravity** 2.65 0  
**Melting Point** 3050 F  
**Evaporation Rate** None

**Solubility in Water;** Insoluble in water.

**Appearance and Odor:** White, tan, black or multi-colored sand and gravel, granular, round or crushed- no  
odor or taste.

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## SECTION IV – REACTIVITY DATA

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**Stability:** Stable

**Incompatibility:** Contact with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, oxygen difluoride may cause fires.

**Hazardous Decomposition or Byproducts:** Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas – silicon tetrafluoride

**Hazardous Polymerization:** Will not occur.

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## SECTION V – HEALTH HAZARD DATA

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**Route of Entry:** Inhalation

**Health Hazards (Acute and Chronic):** Prolonged exposure to crystalline quartz may cause delayed (chronic) lung injury (silicosis). Acute or rapidly developing silicosis may occur in a short period of time in certain occupations such as sandblasters. Silicosis is a form of disabling pulmonary fibrosis which can be progressive and may lead to death.

**Carcinogenicity:**

**NTP? Yes**

The national Toxicology Program (NTP) published its Sixth Annual Report of Carcinogens which concludes that “silica, crystalline (respirable)” may reasonably be anticipated to be a carcinogen. The NTP conclusion is based on sufficient evidence for the carcinogenicity of respirable crystalline silica in experimental animals and limited evidence in humans.

**IARC Monographs? Yes**

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans (volume 42, 1987) concludes that there is sufficient evidence for the carcinogenicity of crystalline silica to experimental animals, and that there is limited evidence of the carcinogenicity of crystalline silica to humans. IARC Class 2A.

**Signs and Symptoms of Exposure:** Undue breathlessness, wheezing, cough and sputum production.

**Medical Conditions Generally Aggravated by Exposure:** Pulmonary function may be reduced by inhalation of respirable crystalline silica. Also lung scarring produced by such inhalation may lead to a progressive massive fibrosis of the lung which may aggravate other pulmonary conditions and diseases and which increases susceptibility to pulmonary tuberculosis. Progressive massive fibrosis may be accompanied by right heart enlargement, heart failure, and pulmonary failure. Smoking aggravates the effects of exposure.

**Emergency and First Aid Procedures:** For sand in eyes, wash immediately with water. If irritation persists, seek medical attention. For gross inhalation, remove person immediately to fresh air, give artificial respiration as needed, seek medical attention as needed.

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## SECTION VI – PRECAUTIONS FOR SAFE HANDLING AND USE

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### Steps to be taken in Case Material is Released or Spilled:

**Spills:** Use dustless methods and place into closable container for disposal, or flush with water. Do not dry sweep. Wear protective equipment specified below.

**Waste Disposal Method:** Dispose in accordance with Federal, State, and Local regulations.

**Other Precautions:** Use dustless systems for storage handling and clean up so that airborne dust does not exceed the PEL. Use adequate ventilation and dust collection. Practice good housekeeping. Do not permit dust to collect on sills, ledges, walls, floors, machinery or equipment. Maintain, clean, and test fit respirators in accordance with OSHA regulations. Maintain and test ventilation and dust collection equipment. Wash or vacuum clothing that has become dusty. See also control measures in Section VII.

See OSHA Hazard Communication Rule 29 CFR Sections 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59 and 1928.21, and state and local worker or community “right to know” laws and regulations. We recommend that smoking be prohibited in all areas where respirators must be used. **WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS-USERS IN CASE OF RESALE) BY POSTING AND OTHER MEANS OF THE HAZARD AND OSHA PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.**

See also American Society for Testing and Materials (ASTM) standard practice E 1132-86, “Standard Practice for Health Requirements Relating to Occupational Exposure to Quartz Dust”.

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## SECTION VII – CONTROL MEASURES

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**Respiratory Protection:** The following chart specifies the types of respirators that may provide respiratory protection for crystalline silica.

### RESPIRATORY PROTECTION FOR CRYSTALLINE SILICA

#### \*MINIMUM RESPIRATORY PROTECTION\*

#### CONDITION

Particulate Concentration

Up to 5 X PEL

Any dust respirator

Up to 10 X PEL

Any dust respirator, except single-use or quarter-mask respirator.  
Any fume respirator or high efficiency particulate filter respirator.  
Any supplied-air respirator.  
Any self-contained breathing apparatus.

Up to 50 X PEL

A high efficiency particulate filter respirator with a full facepiece.  
Any supplied-air respirator operated in pressure-demand or other Positive pressure or continuous-flow mode.

Up to 500 X PEL

A powered air-purifying respirator with a high efficiency particulate filter.

500 X PEL (Cont.)

A type C supplied-air respirator operated in pressure-demand or other positive pressure or continuous-flow mode.

---

Greater than 500 X PEL

Self-contained breathing apparatus with a full facepiece operated in pressure demand or other positive pressure mode.

A combination respirator that includes a Type C supplied air respirator with a full facepiece operated in pressure-demand or other positive pressure continuous-flow mode and an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive pressure mode.

---

\*Only NIOSH-approved or MSHA approved equipment should be used. (See 29 CFR 1910.134)  
See also ANSI standard Z88.2-1980 "Practices for respiratory Protection."

Ventilation: Use sufficient local exhaust to reduce the level of respirable dust to the PEL.

Protective Gloves: Optional

Eye Protection: Wear protective shield (safety glasses) when exposed to dust particles.

Work/Hygienic Practices: Avoid creating and breathing dust.

**The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects that may be caused by purchase, resale, use or exposure to our sand and gravel. Customers-users of sand and gravel containing silica must comply with all applicable health and safety laws, regulations and orders.**

# Safety Data Sheet Limestone

## Section 1. Identification

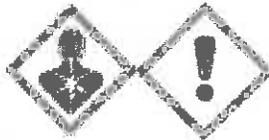
<b>GHS product identifier:</b>	Limestone
<b>Other means of identification:</b>	Crushed Stone, Calcium Carbonate, Aggregate
<b>Relevant identified uses of the substance or mixture and uses advised against:</b>	Limestone may be used in the manufacture of bricks, mortar, cement, concrete, plasters, paving materials, and other construction materials. Limestone aggregate may be distributed in bags, totes, and bulk shipments. No known recommended restrictions.
<b>Supplier's details:</b>	300 E. John Carpenter Freeway, Suite 1645 Irving, TX 75062 (972) 653-5500
<b>Emergency telephone number (24 hours):</b>	<b>CHEMTREC: (800) 424-9300</b>

## Section 2. Hazards Identification

<b>GHS Classification:</b>	CARCINOGENICITY – Category 1A SPECIFIC TARGET ORGAN TOXICITY – Category 2 REPEATED EXPOSURE SKIN CORROSION/IRRITATION – Category 2 EYE DAMAGE/IRRITATION – Category 2A
----------------------------	--

### GHS label elements

**Hazard pictograms:**



**Signal word:**

**Hazard statements:**

Danger  
May cause cancer  
May cause damage to organs (lung) through prolonged or repeated exposure  
Causes skin irritation  
Causes serious eye irritation

**Precautionary statements:**

**Prevention:**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash any exposed body parts. Wear protective gloves/protective clothing/eye protection/face protection.

**Response:**

If exposed or concerned: Get medical advice/attention. If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If in eyes: Rinse continuously with water for several minutes. Remove contact lenses, if present and easy to do.

**Storage:**

Restrict or control access to stockpile areas (store locked up). Engulfment hazard: To prevent burial or suffocation, do not enter a confined space, such as a silo, bulk truck or other storage container or vessel that stores or contains aggregates without an effective procedure for assuring safety.

**Disposal:**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**Hazards not otherwise classified (HNOC):**

None known

**Supplemental Information:**

Respirable Crystalline Silica (RCS) may cause cancer. Limestone is a naturally occurring mineral complex that contains varying quantities of quartz (crystalline silica). In its natural bulk state, limestone is not a known health hazard. Limestone may be subjected to various natural or mechanical forces that produce small particles (dust) which may contain respirable crystalline silica (particles less than 10 micrometers in aerodynamic diameter). Repeated inhalation of respirable crystalline silica (quartz) may cause lung cancer according to IARC and NTP; ACGIH states that it is a suspected cause of cancer. Other forms of RCS (e.g., tridymite and cristobalite) may also be present or formed under certain industrial processes.

### Section 3. Composition/information on ingredients

#### CAS number/other identifiers

**Substance/mixture:** Limestone, Calcium Carbonate, Quartz

Ingredient name	%	CAS number
Limestone	> 50	1317-65-3
Crystalline Silica (Quartz)	> 1	14808-60-7

Any concentration shown as a range is to protect confidentiality or is due to process variation. There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. These materials are mined from the earth. Trace amounts of naturally occurring elements might be detected during chemical analysis of these materials.

Occupational exposure limits, if available, are listed in Section 8.

### Section 4. First aid measures

#### Description of necessary first aid measures

<b>Eye Contact:</b>	Dust: Immediately flush with plenty of water for at least 15 minutes. Hold eyelids apart. Remove contacts if present and easy to do. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Get medical attention if irritation develops or persists.
<b>Inhalation:</b>	Dust: Move to fresh air. Call a physician if symptoms develop or persist.
<b>Skin Contact:</b>	Dust: Wash off with soap and water. Get medical attention if irritation develops and persists.
<b>Ingestion:</b>	Dust: Rinse mouth and drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention.

#### Most important symptoms/effects, acute and delayed

Inhaling dust may cause discomfort in the chest, shortness of breath, and coughing. Prolonged inhalation may cause chronic health effects. This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica liberated from this product can cause silicosis, and may cause cancer.

#### Indication of immediate medical attention and special treatment needed, if necessary

<b>Notes to physician:</b>	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
<b>Specific treatments:</b>	Not Applicable
<b>Protection of first-aiders:</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves
<b>General information:</b>	Pre-existing medical conditions that may be aggravated by exposure include disorders of the eye, skin and lung (including asthma and other breathing disorders). If addicted to tobacco, smoking will impair the ability of the lungs to clear themselves of dust.

See toxicological information (Section 11)

### Section 5. Fire-fighting measures

#### Extinguishing media

<b>Suitable extinguishing media:</b>	Not flammable. Use fire-extinguishing media appropriate for surrounding materials.
<b>Unsuitable extinguishing media:</b>	None known.
<b>Specific hazards arising from the chemical:</b>	No unusual fire or explosion hazards noted. Not a combustible dust.
<b>Hazardous thermal decomposition Products:</b>	None known

**Special protective equipment for fire-fighters:**  
**General fire hazards:**

Use protective equipment appropriate for surrounding materials. No specific precautions. Contact with powerful oxidizing agents may cause fire and/or explosions (see section 10 of SDS). No unusual fire or explosion hazards.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Wear appropriate protective equipment and clothing during clean-up of materials that contain or may liberate dust.

### Methods and materials for containment, cleaning up and Environmental precautions

Spilled material, where dust is generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Do not dry sweep or use compressed air for clean-up. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Avoid discharge of fine particulate matter into drains or water courses.

## Section 7. Handling and storage

### Precautions for safe handling

**Protective measures:**

Do not handle until all safety precautions have been read and understood. Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment.

**Advice on general occupational hygiene:**

Observe good industrial hygiene practices. Promptly remove dusty clothing and launder before reuse.

**Conditions for safe storage, including any incompatibilities:**

Avoid dust formation or accumulation.

## Section 8. Exposure controls/personal protection

### Control parameters

**Occupational exposure limits:**

- 1 – Value equivalent to OSHA formulas (29 CFR 1910.1000; 29 CFR 1917; 29 CFR 1918)
- 2 – Value also applies to MSHA metal/Non-Metal (1973 TLVs at 30 CFR 56/57.5001)
- 3 – OSHA enforces 0.250 mg/m<sup>3</sup> in construction and shipyards (CPL-03-00-007)
- 4 – Value also applies to OSHA construction (29 CFR 1926.55 Appendix A) and shipyards (29 CFR 1915.1000 Table Z)
- 5 – MSHA limit = 10 mg/m<sup>3</sup>

Ingredient name	Exposure limits
Particulates not otherwise classified (CAS SEQ250)	<p><b>ACGIH TLV (United States, 3/2012)</b> TWA: 3 mg/m<sup>3</sup>. Form: Respirable particles (2) TWA: 10 mg/m<sup>3</sup>. Form: Inhalable particles (2)</p> <p><b>OSHA PEL (United States, 6/2010)</b> PEL: 5 mg/m<sup>3</sup>. Form: Respirable fraction PEL: 15 mg/m<sup>3</sup>. Form: Total dust (4) TWA: 5 mg/m<sup>3</sup>. Form: Respirable fraction (1) TWA: 15 mg/m<sup>3</sup>. Form: Total dust (1, 4, 5)</p>
Limestone (Calcium Carbonate) (CAS 1317-65-3)	<p><b>OSHA PEL (United States, 6/2010)</b> TWA: 5 mg/m<sup>3</sup>. Form: Respirable fraction (4) TWA: 15 mg/m<sup>3</sup>. Form: Total dust (5)</p> <p><b>NIOSH REL (United States, 6/2009)</b> TWA: 5 mg/m<sup>3</sup>. Form: Respirable fraction TWA: 10 mg/m<sup>3</sup>. Form: Total dust</p>

Crystalline Silica (Quartz) (CAS 14808-60-7)	OSHA PEL (United States, 6/2010) TWA: 0.3 mg/m <sup>3</sup> Form: Total dust (1,2) TWA: 0.1 mg/m <sup>3</sup> Form: Respirable (1,2,3)
Crystalline Silica (all forms; CAS mixture)	ACGIH TLV (United States, 3/2012) TWA: 0.025 mg/m <sup>3</sup> Form: Respirable fraction NIOSH REL (United States, 6/2009) TWA: 0.05 mg/m <sup>3</sup> Form: Respirable dust
Tridymite and Cristobalite (other forms of crystalline silica) (CAS Mixture)	OSHA PEL (United States, 6/2010) TWA: 0.15 mg/m <sup>3</sup> Form: Total dust (1) TWA: 0.05 mg/m <sup>3</sup> Form: Respirable (1,2)

**Appropriate engineering controls:** Good general ventilation (typically 10 air changes per hour indoors) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Exposure guidelines:** OSHA PELs, MSHA PELs, and ACGIH TLVs are 8-hr TWA values. NIOSH RELs are for TWA exposures up to 10-hr/day and 40-hr/wk. Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled. Terms including "Particulates Not Otherwise Classified," "Particulates Not Otherwise Regulated," "Particulates Not Otherwise Specified," and "Inert or Nuisance Due" are often used interchangeably; however, the user should review each agency's terminology for differences in meanings.

**Biological limit values:** No biological exposure limits noted for the ingredient(s)

## Individual protection measures

**Hygiene measures:** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**Eye/face protection:** Wear safety glasses with side shields (or goggles).

**Hand protection:** Use personal protective equipment as required.

**Body protection:** Use personal protective equipment as required.

**Other skin protection:** Use personal protective equipment as required.

**Respiratory protection:** When handling or performing work that produces dust or respirable crystalline silica in excess of applicable exposure limits, wear a NIOSH-approved respirator that is properly fitted and is in good condition. Respirators must be used in accordance with all applicable workplace regulations.

**Thermal hazards:** Not anticipated. Wear appropriate thermal protective clothing if necessary.

## Section 9. Physical and chemical properties

### Appearance

<b>Physical State:</b>	Solid, particles of granular and angular mixture	<b>Lower and Upper explosive flammable limits</b>	Not applicable
<b>Color:</b>	Various colors	<b>Vapor pressure:</b>	Not applicable
<b>Odor:</b>	Not applicable	<b>Vapor density:</b>	Not applicable
<b>Odor threshold:</b>	Not applicable	<b>Relative density:</b>	Not available
<b>pH:</b>	Not available	<b>Solubility:</b>	Not available
<b>Melting point:</b>	Not applicable	<b>Solubility in water:</b>	Insoluble
<b>Boiling point:</b>	Not applicable	<b>Partition coefficient: n-octanol/water:</b>	Not applicable
<b>Flash point:</b>	Non-combustible	<b>Auto-ignition temperature:</b>	Not applicable
<b>Burning time:</b>	Not applicable	<b>Decomposition temperature:</b>	Not applicable
<b>Burning rate:</b>	Not applicable	<b>SADT:</b>	Not available
<b>Evaporation Rate:</b>	Not applicable	<b>Viscosity:</b>	Not applicable
<b>Flammability (solid, gas):</b>	Not applicable		

## Section 10. Stability and reactivity

**Reactivity:** The product is stable and non-reactive under normal conditions of use, storage and transport  
**Chemical Stability:** Material is stable under normal conditions.  
**Possibility of hazardous reactions:** No dangerous reaction known under conditions of normal use  
**Conditions to avoid:** Avoid contact with strong oxidizing agents  
**Incompatible materials:** Crystalline silica may react violently with strong oxidizing agents, causing fire and explosions.  
**Hazardous decomposition products:** Silica dissolves in hydrofluoric acid producing a corrosive gas-silicon tetrafluoride.

## Section 11. Toxicological information

### Information on toxicological effects

**Acute toxicity:** Not expected to be acutely toxic.  
**Irritation/Corrosion:** **Skin:** Dust: May cause irritation through mechanical abrasion. This product is not expected to be a skin hazard.  
**Eyes:** Direct contact with eyes may cause temporary irritation through mechanical abrasion.  
**Inhalation:** Repeated inhalation of respirable crystalline silica (quartz) may cause silicosis, a fibrosis (scarring) of the lungs. Silicosis is irreversible and may be fatal. Silicosis increases the risk of contracting pulmonary tuberculosis. Some studies suggest that repeated inhalation of respirable crystalline silica may cause other adverse health effects including lung and kidney cancer.  
**Ingestion:** Not likely due to product form. However accidental ingestion may cause discomfort.  
**Sensitization:** **Respiratory sensitization:** No respiratory sensitizing effects known.  
**Skin sensitization:** Not known to be a dermal irritant or sensitizer.  
**Mutagenicity:** No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.  
**Aspiration Hazard:** Not expected to be an aspiration hazard.  
**Reproductive toxicity:** Not expected to be a reproductive hazard.  
**Symptoms related to physical, chemical and toxicological characteristics:** Dust: discomfort in the chest. Shortness of breath. Coughing.  
**Carcinogenicity:** Respirable crystalline silica has been classified by IARC and NTP as a known human carcinogen, and classified by ACGIH as a suspected human carcinogen.

Product/ingredient name	OSHA	IARC	ACGIH	NTP
Crystalline Silica (Quartz) CAS 14808-60-7)	Not listed	1 Carcinogenic to humans	A2	Known to be human Carcinogen
Respirable Tridymite and Cristobalite (Other forms of Crystalline) (CAS Mixture)	Not listed	1 Carcinogenic to humans	-	-

#### Specific target organ toxicity (acute exposure)

Name	Category	Route of Exposure	Target Organs
Crystalline Silica (Quartz) CAS 14808-60-7)	-	Inhalation	Not reported to have effects
Respirable Tridymite and Cristobalite (Other forms of Crystalline) (CAS Mixture)	-	Inhalation	Not reported to have effects

#### Specific target organ toxicity (chronic exposure)

Name	Category	Route of Exposure	Target Organs
Crystalline Silica (Quartz) CAS 14808-60-7)		Inhalation	May cause damage to organs (lung through prolonged or repeated exposure.
Respirable Tridymite and Cristobalite (Other forms of Crystalline) (CAS Mixture)		Inhalation	May cause damage to organs (lung through prolonged or repeated exposure.

**Potential chronic health effects: General:** Prolonged inhalation of respirable crystalline silica may be harmful. May cause damage to organs (lungs) through prolonged or repeated exposure. There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with autoimmune disorders and other adverse health effects involving the kidney. In particular, the incidence of scleroderma (thickening of the skin caused by swelling and the thickening of fibrous tissue) appears to be higher in silicotic individuals. To date, the evidence does not conclusively determine a causal relationship between silica exposure and these adverse health effects.

## Section 12. Ecological Information

### Ecotoxicity

Not expected to be harmful to aquatic organisms. Discharging sand and gravel dust and fines into waters may increase total suspended particulate (TSP) levels that can be harmful to certain aquatic organisms.

**Persistence and degradability:** Not applicable.  
**Bioaccumulative potential:** Not applicable.  
**Mobility in soil:** Not applicable.  
**Other adverse effects:** No other adverse environmental effects (e.g., ozone depletion, photochemical ozone creation potential, global warming potential) are expected from this component.

## Section 13. Disposal considerations

**Disposal methods:** Do not allow fine particulate matter to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with fine particulates. Dispose of contents in accordance with local/regional/national/international regulations.

**Hazardous waste code:** Not regulated.

**Waste from residues/unused products:** Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

**Contaminated packaging:** Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty packaging materials should be recycled or disposed of in accordance with applicable regulations and practices.

## Section 14. Transportation information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	-	-	-
Additional information	-	-	-

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

## Section 15. Regulatory Information

**U.S. Federal regulations:**  
**OSHA Hazard Communication Standard, 29 CFR 1910.1200** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200  
**TSCA Section 12(b) Export Notification (40 CFR 707, Subpart. D):** Not regulated  
**OSHA Specifically Regulated**

Substances (29 CFR 1910.1001-1050): Not listed  
 CERCLA Hazardous Substance List (40 CFR 302.4): Not listed  
 Clean Air Act Section 112 (b): Hazardous Air Pollutants (HAPs): Not regulated  
 Clean Air Act Section 112 (r) Accidental Release Prevention (40 CFR 68.130): Not regulated  
 Safe Drinking Water Act (SDWA): Not regulated

**SARA 311/312**

Classification: Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire Hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Crystalline Silica (Quartz) CAS 14808-60-7	>1	No	No	No	No	Yes

**SARA 313 (TRI)**

Form R-Report requirements	Product name	CAS number	%
	Crystalline Silica (Quartz)	14808-60-7	Not regulated

**State regulations**

**Massachusetts RTK:** The following components are listed: Crystalline Silica (Quartz) (CAS 14808-60-7), Respirable Tridymite and Cristobalite (other forms of crystalline silica) (CAS Mixture)  
**New Jersey RTK:** The following components are listed: Crystalline Silica (Quartz) (CAS 14808-60-7), Respirable Tridymite and Cristobalite (other forms of crystalline silica) (CAS mixture)  
**Pennsylvania RTK:** The following components are listed: Crystalline Silica (Quartz) (CAS 14808-60-7), Respirable Tridymite and Cristobalite (other forms of crystalline silica) (CAS Mixture)  
**Rhode Island RTK:** Not regulated.

**California Prop. 65**

WARNING: This product contains crystalline silica and chemicals (trace metals) known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Crystalline Silica (Quartz) CAS 14808-60-7	Yes	No	No	No

**International regulations**

Ingredient name	CAS #	TSCA	Canada	WHMIS	EEC
Crystalline Silica (Quartz)	14808-60-7	Yes	DSL	D2A	EINECS
Limestone	1317-65-3	Yes	NDSL	N/Ap	EINECS

WHMIS Classification:

D2A "Materials Causing Other Toxic Effects"



## Section 16. Other Information

Date of Issue: 06/01/2015

Version: 06/01/2015

Revised Section(s): N/Ap

### Notice to reader

While the information provided in this safety data sheet is believed to provide a useful summary of the hazards of limestone as it is commonly used, the sheet cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product. In particular, the data furnished in this sheet do not address hazards that may be posed by other materials mixed with limestone to produce limestone products. Users should review other relevant material safety data sheets before working with this limestone or working on limestone products.

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY Lehigh Hanson, except that the product shall conform to contracted specifications. The information provided herein was believed by the Lehigh Hanson to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe handling and use of product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for damages and no claim of any kind, whether as to product delivered or for non-delivery of product, and whether based on contract, breach of warranty, negligence, or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.

### Abbreviations

ACGIH — American Conference of Governmental Industrial Hygienists  
CAS — Chemical Abstract Service  
CERCLA — Comprehensive Emergency Response and Comprehensive Liability Act  
CFR — Code of Federal Regulations  
DOT — Department of Transportation  
GHS — Globally Harmonized System  
HEPA — High Efficiency Particulate Air  
IATA — International Air Transport Association  
IARC — International Agency for Research on Cancer  
IMDG — International Maritime Dangerous Goods  
NIOSH — National Institute of Occupational Safety and Health  
NOEC — No Observed Effect Concentration  
NTP — National Toxicology Program  
OSHA — Occupational Safety and Health Administration  
PEL — Permissible Exposure Limit  
REL — Recommended Exposure Limit  
RQ — Reportable Quantity  
SARA — Superfund Amendments and Reauthorization Act  
SDS — Safety Data Sheet  
TLV — Threshold Limit Value  
TPQ — Threshold Planning Quantity  
TSCA — Toxic Substances Control Act  
TWA — Time-Weighted Average  
UN — United Nations



# Material Safety Data Sheet

MSDS ID NO.: 0290MAR019  
Revision date: 12/07/2010

## 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

**Product name:** Marathon No. 2 Ultra Low Sulfur Diesel 15 ppm Sulfur Max  
**Synonym:** Ultra Low Sulfur Diesel No. 2 15 ppm Sulfur Max; Ultra Low Sulfur Diesel No. 2 15 ppm Sulfur Max with Polar Plus; No. 2 Diesel, Motor Vehicle Use, Undyed; No. 2 Diesel, Motor Vehicle Use, Undyed, with Polar Plus; ULSD No. 2 Diesel 15 ppm Sulfur Max; ULSD No. 2 Diesel 15 ppm Sulfur Max with Polar Plus; No. 2 MV 15 Diesel with Polar Plus.  
**Chemical Family:** Petroleum Hydrocarbon  
**Formula:** Mixture

**Manufacturer:**  
Marathon Petroleum Company LP  
539 South Main Street Findlay OH 45840

**Other information:** 419-421-3070  
**Emergency telephone number:** 877-627-5463

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

No. 2 Ultra Low Sulfur Diesel is a complex mixture of paraffins, cycloparaffins, olefins and aromatic hydrocarbon chain lengths predominantly in the range of C9-C16. Can contain small amounts of dye and other additives (<0.15%) which are not considered hazardous at the concentrations used.

Note: May contain up to 5% Renewable Diesel, CASN 928771-01-1.

### Product information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Marathon No. 2 Ultra Low Sulfur Diesel	68476-30-2	100	Skin - potential significant contribution to overall exposure by the cutaneous route 100 mg/m <sup>3</sup> TWA		

### Component information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Saturated Hydrocarbons	Mixture	70-80			

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Aromatic Hydrocarbons	Mixture	17-25			
Unsaturated Hydrocarbons	Mixture	3-6			
Naphthalene	91-20-3	0.01-0.5	Skin - potential significant contribution to overall exposure by the cutaneous route 10 ppm TWA 15 ppm STEL	= 10 ppm TWA = 50 mg/m <sup>3</sup> TWA = 15 ppm STEL = 75 mg/m <sup>3</sup> STEL	

**Notes:**

The manufacturer has voluntarily elected to reflect exposure limits contained in OSHA's 1989 air contaminants standard in its MSDS's, even though certain of those exposure limits were vacated in 1992.

## EMERGENCY OVERVIEW

CAUTION!

VAPORS, FUMES, OR MISTS MAY CAUSE RESPIRATORY TRACT IRRITATION  
 MAY BE HARMFUL OR FATAL IF SWALLOWED  
 MAY CAUSE LUNG DAMAGE  
 OVEREXPOSURE MAY CAUSE CNS DEPRESSION

MAY CAUSE CANCER BASED ON ANIMAL DATA  
 SEE TOXICOLOGICAL INFORMATION SECTION FOR MORE INFORMATION

COMBUSTIBLE LIQUID AND VAPOR  
 VAPOR MAY CAUSE FLASH FIRE  
 MATERIAL MAY ACCUMULATE STATIC CHARGE

STABLE

### Inhalation:

Breathing high concentrations may be harmful.

May cause central nervous system depression or effects. Symptoms may include headache, excitation, euphoria, dizziness, incoordination, drowsiness, light-headedness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death, depending on the concentration and duration of exposure.

Overexposure to this material may cause systemic damage including target organ effects listed under "Toxicological Information."

### Ingestion:

Swallowing this material may be harmful.

May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea.

Aspiration into lungs may cause chemical pneumonia and lung damage. Exposure may also cause central nervous system symptoms similar to those listed under "Inhalation" (see Inhalation section).

### Skin contact:

Contact may cause reddening, itching and inflammation. Effects may become more serious with repeated or prolonged contact. Skin contact may cause harmful effects in other parts of the body.

### Eye contact:

Contact may cause pain and severe reddening and inflammation of the conjunctiva. Effects may become more serious with repeated or prolonged contact.

### Carcinogenic Evaluation:

#### Product information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Marathon No. 2 Ultra Low Sulfur Diesel 68476-30-2	NE			

**Notes:**

The International Agency for Research on Cancer (IARC) has determined that there is inadequate evidence for the carcinogenicity of diesel fuel/fuel oil in humans. IARC determined that there was limited evidence for the carcinogenicity of marine diesel fuel in animals. Distillate (light) diesel fuels were not classifiable as to their carcinogenicity to humans (Group 3A).

IARC has determined that there is sufficient evidence for the carcinogenicity in experimental animals of diesel engine exhaust and extracts of diesel engine exhaust particles. IARC determined that there is only limited evidence for the carcinogenicity in humans of diesel engine exhaust. However, IARC's overall evaluation has resulted in the IARC designation of diesel engine exhaust as probably carcinogenic to humans (Group 2A) because of the presence of certain engine exhaust components.

The International Agency for Research on Cancer (IARC) has also determined that there is sufficient evidence for the carcinogenicity in experimental animals of light and heavy vacuum distillates, of light and heavy catalytically cracked distillates and of cracked residues (including heavy thermocracked distillates/residues) derived from the refining of crude oil.

**Component Information:**

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Naphthalene 91-20-3	Monograph 82 [2002]	Reasonably Anticipated To Be A Human Carcinogen male rat-clear evidence; female rat-clear evidence; male mice-no evidence; female mice-some evidence	A4 - Not Classifiable as a Human Carcinogen	Present

**Notes:**

The International Agency for Research on Cancer (IARC) and the Environmental Protection Agency (EPA) have determined that naphthalene is a possible human carcinogen.

## 4. FIRST AID MEASURES

### Eye Contact:

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. GET IMMEDIATE MEDICAL ATTENTION.

### Skin Contact:

Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. Get medical attention if irritation persists. Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties.

### Ingestion:

Do not induce vomiting. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

### Inhalation:

Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear and give oxygen. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

### NOTES TO PHYSICIAN:

INGESTION: If ingested this material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

### Medical Conditions Aggravated By Exposure:

skin,

## 5. FIRE FIGHTING MEASURES

### Suitable extinguishing media:

For small fires, Class B fire extinguishing media such as CO<sub>2</sub>, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Fire fighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

### Specific hazards:

This product has been determined to be a combustible liquid per the OSHA Hazard Communication Standard and should be handled accordingly. For additional fire related information, see NFPA 30 or the North American Emergency Response Guide 128.

### Special protective equipment for firefighters:

Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material. Keep run-off water out of sewers and water sources.

Flash point:  
Autoignition temperature:  
Flammable limits in air - lower (%):

120-190 F  
489 F  
0.7

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Diesel 15 ppm Sulfur Max

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## 5. FIRE FIGHTING MEASURES

Flammable limits in air - upper (%): 5.0

### NFPA rating:

Health: 1  
Flammability: 2  
Instability: 0  
Other: -

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions:

Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate. Contain liquid with sand or soil. Recover and return free product to proper containers. Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids.

## 7. HANDLING AND STORAGE

### Handling:

Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements. Use appropriate grounding and bonding practices. Store in properly closed containers that are appropriately labeled and in a cool well-ventilated area. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Do not cut, drill, grind or weld on empty containers since they may contain explosive residues.

Avoid repeated and prolonged skin contact. Never siphon this product by mouth. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### PERSONAL PROTECTIVE EQUIPMENT

- Engineering measures:** Local or general exhaust required when using at elevated temperatures that generate vapors or mists.
- Respiratory protection:** Use approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 1910.134. Self-contained breathing apparatus should be used for fire fighting.
- Skin and body protection:** Neoprene, nitrile, polyvinyl alcohol (PVA), polyvinyl chloride and polyurethane gloves to prevent skin contact.
- Eye protection:** No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields.
- Hygiene measures:** No special protective clothing is normally required. Select protective clothing depending on industrial operations. Use mechanical ventilation equipment that is explosion-proof.

## 9. PHYSICAL AND CHEMICAL PROPERTIES:

### Appearance:

Colorless Liquid

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Diesel 15 ppm Sulfur Max

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## 9. PHYSICAL AND CHEMICAL PROPERTIES:

<b>Physical state (Solid/Liquid/Gas):</b>	Liquid
<b>Substance type (Pure/Mixture):</b>	Mixture
<b>Color:</b>	Colorless
<b>Odor:</b>	Not applicable.
<b>Molecular weight:</b>	180
<b>pH:</b>	Neutral
<b>Boiling point/range (5-95%):</b>	360-550 F
<b>Melting point/range:</b>	Not determined.
<b>Decomposition temperature:</b>	Not applicable.
<b>Specific gravity:</b>	C.A. 0.8
<b>Density:</b>	6.76 lbs/gal
<b>Bulk density:</b>	No data available.
<b>Vapor density:</b>	4-5
<b>Vapor pressure:</b>	1-10 mm Hg @ 100 F
<b>Evaporation rate:</b>	No data available.
<b>Solubility:</b>	Negligible
<b>Solubility in other solvents:</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	No data available.
<b>VOC content(%):</b>	10%
<b>Viscosity:</b>	1.3-2.1 @ 50 C

## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	The material is stable at 70 F, 760 mm pressure.
<b>Polymerization:</b>	Will not occur.
<b>Hazardous decomposition products:</b>	Combustion produces carbon monoxide, aldehydes, aromatic and other hydrocarbons.
<b>Materials to avoid:</b>	Strong oxidizers such as nitrates, perchlorates, chlorine, fluorine
<b>Conditions to avoid:</b>	Excessive heat, sources of ignition and open flames.

## 11. TOXICOLOGICAL INFORMATION

**Acute toxicity:**

**Product information:**

Name	CAS Number	Inhalation:	Dermal:	Oral:
Marathon No. 2 Ultra Low Sulfur Diesel	68476-30-2	No data available	No data available	No data available

**Toxicology information:**

**MIDDLE DISTILLATES, PETROLEUM:** Long-term repeated (lifetime) skin exposure to similar materials has been reported to result in an increase in skin tumors in laboratory rodents. The relevance of these findings to humans is not clear at this time.

**MIDDLE DISTILLATES WITH CRACKED STOCKS:** Light cracked distillates have been shown to be carcinogenic in animal tests and have tested positive with in vitro genotoxicity tests. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung function.

**ISOPARAFFINS:** Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, in-depth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

**NAPHTHALENE:** Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with Glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) in vitro. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

**DIESEL EXHAUST:** Chronic inhalation studies of whole diesel engine exhaust in mice and rats produced a significant increase in lung tumors. Combustion of kerosine and/or diesel fuels produces gases and particulates which include carbon monoxide, carbon dioxide, oxides of nitrogen and/or sulfur and hydrocarbons. Significant exposure to carbon monoxide vapors decreases the oxygen carrying capacity of the blood and may cause tissue hypoxia via formation of carboxyhemoglobin.

**TARGET ORGANS:**

central nervous system, skin, respiratory system, lungs, kidney, liver, thymus, reproductive organs,

## 12. ECOTOXICOLOGICAL INFORMATION

- Mobility:** May partition into air, soil and water.
- Ecotoxicity:** Toxic to aquatic organisms.
- Bioaccumulation:** Not expected to bioaccumulate in aquatic organisms.
- Persistence/Biodegradation:** Readily biodegradable in the environment.

## 13. DISPOSAL CONSIDERATIONS

**Cleanup Considerations:**

This product as produced is not specifically listed as an EPA RCRA hazardous waste according to federal regulations (40 CFR 261). However, when discarded or disposed of, it may meet the criteria of an "characteristic" hazardous waste. This material could become a hazardous waste if mixed or contaminated with a hazardous waste or other substance(s). It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

## 14. TRANSPORT INFORMATION

**49 CFR 172.101:**

- DOT:** This material when transported via US commerce would be regulated by DOT Regulations.
- |                                       |                 |
|---------------------------------------|-----------------|
| <b>Transport Information:</b>         |                 |
| <b>Proper shipping name:</b>          | Fuel Oil, No. 2 |
| <b>UN/identification No:</b>          | NA 1993         |
| <b>Hazard Class:</b>                  | 3               |
| <b>Packing group:</b>                 | III             |
| <b>DOT reportable quantity (lbs):</b> | Not applicable. |

- |                              |                 |
|------------------------------|-----------------|
| <b>Proper shipping name:</b> | Fuel Oil, No. 2 |
| <b>UN/identification No:</b> | NA 1993         |
| <b>Hazard Class:</b>         | 3               |
| <b>Packing group:</b>        | III             |

## 15. REGULATORY INFORMATION

**US Federal Regulatory Information:**  
MSDS ID NO.: 0290MAR019

Product name: Marathon No. 2 Ultra Low Sulfur Diesel 15 ppm Sulfur Max

US TSCA Chemical Inventory Section 8(b):

This product and/or its components are listed on the TSCA Chemical Inventory.

OSHA Hazard Communication Standard:

This product has been evaluated and determined to be hazardous as defined in OSHA's Hazard Communication Standard.

**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:**

This product contains the following component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Saturated Hydrocarbons	NA
Aromatic Hydrocarbons	NA
Unsaturated Hydrocarbons	NA
Naphthalene	NA

**SARA Section 304:**

This product contains the following component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Saturated Hydrocarbons	NA
Aromatic Hydrocarbons	NA
Unsaturated Hydrocarbons	NA
Naphthalene	= 100 lb final RQ = 45.4 kg final RQ

**SARA Section 311/312**

The following EPA hazard categories apply to this product:

Acute Health Hazard  
Fire Hazard  
Chronic Health Hazard

**SARA Section 313:**

This product contains the following component(s) that may be subject to reporting on the Toxic Release Inventory (TRI) From R:

Name	CERCLA/SARA 313 Emission reporting:
Saturated Hydrocarbons	None
Aromatic Hydrocarbons	None
Unsaturated Hydrocarbons	None
Naphthalene	= 0.1 % de minimis concentration

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

**Saturated Hydrocarbons**

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.

### Saturated Hydrocarbons

Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

### Aromatic Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed
Pennsylvania Right-To-Know:	Not Listed
Massachusetts Right-To Know:	Not Listed
Florida substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

### Unsaturated Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed
Pennsylvania Right-To-Know:	Not Listed
Massachusetts Right-To Know:	Not Listed
Florida substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

### Naphthalene

Louisiana Right-To-Know:	Not Listed
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**Saturated Hydrocarbons**

California Proposition 65: carcinogen, initial date 4/19/02

New Jersey Right-To-Know: sn 1322  
Pennsylvania Right-To-Know: Environmental hazard  
Massachusetts Right-To Know: Present

Florida substance List: Not Listed.  
Rhode Island Right-To-Know: Toxic; Flammable  
Michigan critical materials register list: Not Listed.  
Massachusetts Extraordinarily Hazardous Substances: Not Listed

California - Regulated Carcinogens: Not Listed  
Pennsylvania RTK - Special Hazardous Substances: Not Listed  
New Jersey - Special Hazardous Substances: carcinogen

New Jersey - Environmental Hazardous Substances List: SN 1322 TPQ 500 lb  
Illinois - Toxic Air Contaminants: Present  
New York - Reporting of Releases Part 597 - List of Hazardous Substances: = 1 lb RQ land/water  
= 100 lb RQ air

**Canadian Regulatory Information:**

Canada DSL/NDL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Naphthalene	B4, D2A	1 %

**NOTE:** Not Applicable.

**16. OTHER INFORMATION**

**Additional Information:** No data available.

**Prepared by:** Mark S. Swanson, Manager, Toxicology and Product Safety

The information and recommendations contained herein are based upon tests believed to be reliable. However, Marathon Petroleum Company LP (MPC) does not guarantee their accuracy or completeness nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose. Adjustment to conform to actual conditions of usage maybe required. MPC assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.

**End of Safety Data Sheet**



# Material Safety Data Sheet

MSDS ID NO.: 0291MAR019  
Revision date: 12/07/2010

## 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

**Product name:** Marathon No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max  
**Synonym:** Ultra Low Sulfur Diesel No. 2 Dyed 15 ppm Sulfur Max; Ultra Low Sulfur Diesel No. 2 Dyed 15 ppm Sulfur Max with Polar Plus; No. 2 Diesel, Tax Exempt-Motor Vehicle Use, Dyed; No. 2 Diesel, Tax Exempt-Motor Vehicle Use, Dyed, with Polar Plus; ULSD No. 2 Diesel Dyed 15 ppm Sulfur Max; ULSD No. 2 Diesel Dyed 15 ppm Sulfur Max, with Polar Plus; No. 2 MV 15 Diesel Dyed; No. 2 MV 15 Diesel Dyed, with Polar Plus.  
**Chemical Family:** Petroleum Hydrocarbon  
**Formula:** Mixture

**Manufacturer:**  
Marathon Petroleum Company LP  
539 South Main Street Findlay OH 45840

**Other information:** 419-421-3070  
**Emergency telephone number:** 877-627-5463

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

No. 2 Ultra Low Sulfur Diesel is a complex mixture of paraffins, cycloparaffins, olefins and aromatic hydrocarbon chain lengths predominantly in the range of C9-C16. Can contain small amounts of red dye and additives (<0.15%) which are not considered hazardous at the concentrations used.

Note: May contain up to 5% Renewable Diesel, CASN 928771-01-1.

### Product Information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Marathon No. 2 Ultra Low Sulfur Diesel	68476-30-2	100	Skin - potential significant contribution to overall exposure by the cutaneous route 100 mg/m <sup>3</sup> TWA		

### Component Information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Saturated Hydrocarbons	Mixture	70-80			

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Aromatic Hydrocarbons	Mixture	17-25			
Unsaturated Hydrocarbons	Mixture	3-6			
Naphthalene	91-20-3	0.01-0.5	Skin - potential significant contribution to overall exposure by the cutaneous route 10 ppm TWA 15 ppm STEL	= 10 ppm TWA = 50 mg/m <sup>3</sup> TWA = 15 ppm STEL = 75 mg/m <sup>3</sup> STEL	

**Notes:**

The manufacturer has voluntarily elected to reflect exposure limits contained in OSHA's 1989 air contaminants standard in its MSDS's, even though certain of those exposure limits were vacated in 1992.

### 3. HAZARDS IDENTIFICATION

## EMERGENCY OVERVIEW

### CAUTION!

VAPORS, FUMES, OR MISTS MAY CAUSE RESPIRATORY TRACT IRRITATION  
MAY BE HARMFUL OR FATAL IF SWALLOWED  
MAY CAUSE LUNG DAMAGE  
OVEREXPOSURE MAY CAUSE CNS DEPRESSION

MAY CAUSE CANCER BASED ON ANIMAL DATA  
SEE TOXICOLOGICAL INFORMATION SECTION FOR MORE INFORMATION

COMBUSTIBLE LIQUID AND VAPOR  
VAPOR MAY CAUSE FLASH FIRE  
MATERIAL MAY ACCUMULATE STATIC CHARGE

STABLE

#### Inhalation:

Breathing high concentrations may be harmful.

May cause central nervous system depression or effects. Symptoms may include headache, excitation, euphoria, dizziness, incoordination, drowsiness, light-headedness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death, depending on the concentration and duration of exposure. Overexposure to this material may cause systemic damage including target organ effects listed under "Toxicological Information."

#### Ingestion:

Swallowing this material may be harmful.

May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea.

Aspiration into lungs may cause chemical pneumonia and lung damage. Exposure may also cause central nervous system symptoms similar to those listed under "Inhalation" (see Inhalation section).

#### Skin contact:

Contact may cause reddening, itching and inflammation. Effects may become more serious with repeated or prolonged contact. Skin contact may cause harmful effects in other parts of the body.

#### Eye contact:

Contact may cause pain and severe reddening and inflammation of the conjunctiva. Effects may become more serious with repeated or prolonged contact.

#### Carcinogenic Evaluation:

#### Product information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Marathon No. 2 Ultra Low Sulfur Diesel 68476-30-2	NE			

**Notes:**

The International Agency for Research on Cancer (IARC) has determined that there is inadequate evidence for the carcinogenicity of diesel fuel/fuel oil in humans. IARC determined that there was limited evidence for the carcinogenicity of marine diesel fuel in animals. Distillate (light) diesel fuels were not classifiable as to their carcinogenicity to humans (Group 3A).

IARC has determined that there is sufficient evidence for the carcinogenicity in experimental animals of diesel engine exhaust and extracts of diesel engine exhaust particles. IARC determined that there is only limited evidence for the carcinogenicity in humans of diesel engine exhaust. However, IARC's overall evaluation has resulted in the IARC designation of diesel engine exhaust as probably carcinogenic to humans (Group 2A) because of the presence of certain engine exhaust components.

The International Agency for Research on Cancer (IARC) has also determined that there is sufficient evidence for the carcinogenicity in experimental animals of light and heavy vacuum distillates, of light and heavy catalytically cracked distillates and of cracked residues (including heavy thermocracked distillates/residues) derived from the refining of crude oil.

**Component Information:**

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Naphthalene 91-20-3	Monograph 82 [2002]	Reasonably Anticipated To Be A Human Carcinogen male rat-clear evidence; female rat-clear evidence; male mice-no evidence; female mice-some evidence	A4 - Not Classifiable as a Human Carcinogen	Present

**Notes:**

The International Agency for Research on Cancer (IARC) and the Environmental Protection Agency (EPA) have determined that naphthalene is a possible human carcinogen.

## 4. FIRST AID MEASURES

### Eye Contact:

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. GET IMMEDIATE MEDICAL ATTENTION.

### Skin Contact:

Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. Get medical attention if irritation persists. Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties.

### Ingestion:

Do not induce vomiting. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

### Inhalation:

Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear and give oxygen. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

### NOTES TO PHYSICIAN:

INGESTION: If ingested this material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

### Medical Conditions Aggravated By Exposure:

skin,

## 5. FIRE FIGHTING MEASURES

### Suitable extinguishing media:

For small fires, Class B fire extinguishing media such as CO<sub>2</sub>, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Fire fighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

### Specific hazards:

This product has been determined to be a combustible liquid per the OSHA Hazard Communication Standard and should be handled accordingly. For additional fire related information, see NFPA 30 or the North American Emergency Response Guide 128.

### Special protective equipment for firefighters:

Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material. Keep run-off water out of sewers and water sources.

### Flash point:

120-190 F

### Autoignition temperature:

489 F

### Flammable limits in air - lower (%):

0.7

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## 5. FIRE FIGHTING MEASURES

Flammable limits in air - upper (%):

5.0

### NFPA rating:

Health: 1

Flammability: 2

Instability: 0

Other: -

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions:

Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate. Contain liquid with sand or soil. Recover and return free product to proper containers. Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids.

## 7. HANDLING AND STORAGE

### Handling:

Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements. Use appropriate grounding and bonding practices. Store in properly closed containers that are appropriately labeled and in a cool well-ventilated area. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Do not cut, drill, grind or weld on empty containers since they may contain explosive residues.

Avoid repeated and prolonged skin contact. Never siphon this product by mouth. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### PERSONAL PROTECTIVE EQUIPMENT

- Engineering measures:** Local or general exhaust required when using at elevated temperatures that generate vapors or mists.
- Respiratory protection:** Use approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 1910.134. Self-contained breathing apparatus should be used for fire fighting.
- Skin and body protection:** Neoprene, nitrile, polyvinyl alcohol (PVA), polyvinyl chloride and polyurethane gloves to prevent skin contact.
- Eye protection:** No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields.
- Hygiene measures:** No special protective clothing is normally required. Select protective clothing depending on industrial operations. Use mechanical ventilation equipment that is explosion-proof.

## 9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance:

Red Liquid

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Diesel Dyed 15 ppm Sulfur Max

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## 9. PHYSICAL AND CHEMICAL PROPERTIES:

Physical state (Solid/Liquid/Gas):	Liquid
Substance type (Pure/Mixture):	Mixture
Color:	Red
Odor:	Not applicable.
Molecular weight:	180
pH:	Neutral
Boiling point/range (5-95%):	360-550 F
Melting point/range:	Not determined.
Decomposition temperature:	Not applicable.
Specific gravity:	C.A. 0.8
Density:	6.76 lbs/gal
Bulk density:	No data available.
Vapor density:	4-5
Vapor pressure:	1-10 mm Hg @ 100 F
Evaporation rate:	No data available.
Solubility:	Negligible
Solubility in other solvents:	No data available.
Partition coefficient (n-octanol/water):	No data available.
VOC content(%):	10%
Viscosity:	1.3-2.1 @ 50 C

## 10. STABILITY AND REACTIVITY

Stability:	The material is stable at 70 F, 760 mm pressure.
Polymerization:	Will not occur.
Hazardous decomposition products:	Combustion produces carbon monoxide, aldehydes, aromatic and other hydrocarbons.
Materials to avoid:	Strong oxidizers such as nitrates, perchlorates, chlorine, fluorine.
Conditions to avoid:	Excessive heat, sources of ignition and open flames.

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity:

### Product information:

Name	CAS Number	Inhalation:	Dermal:	Oral:
Marathon No. 2 Ultra Low Sulfur Diesel	68476-30-2	No data available	No data available	No data available

### Toxicology Information:

**MIDDLE DISTILLATES, PETROLEUM:** Long-term repeated (lifetime) skin exposure to similar materials has been reported to result in an increase in skin tumors in laboratory rodents. The relevance of these findings to humans is not clear at this time.

**MIDDLE DISTILLATES WITH CRACKED STOCKS:** Light cracked distillates have been shown to be carcinogenic in animal tests and have tested positive with in vitro genotoxicity tests. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung function.

**ISOPARAFFINS.** Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, in-depth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

**NAPHTHALENE:** Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with Glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) in vitro. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

**DIESEL EXHAUST:** Chronic inhalation studies of whole diesel engine exhaust in mice and rats produced a significant increase in lung tumors. Combustion of kerosine and/or diesel fuels produces gases and particulates which include carbon monoxide, carbon dioxide, oxides of nitrogen and/or sulfur and hydrocarbons. Significant exposure to carbon monoxide vapors decreases the oxygen carrying capacity of the blood and may cause tissue hypoxia via formation of carboxyhemoglobin.

**TARGET ORGANS:**

central nervous system, skin, respiratory system, lungs, kidney, liver, thymus, reproductive organs,

## 12. ECOTOXICOLOGICAL INFORMATION

**Mobility:**

May partition into air, soil and water.

**Ecotoxicity:**

Toxic to aquatic organisms.

**Bioaccumulation:**

Not expected to bioaccumulate in aquatic organisms.

**Persistence/Biodegradation:**

Readily biodegradable in the environment.

## 13. DISPOSAL CONSIDERATIONS

**Cleanup Considerations:**

This product as produced is not specifically listed as an EPA RCRA hazardous waste according to federal regulations (40 CFR 261). However, when discarded or disposed of, it may meet the criteria of an "characteristic" hazardous waste. This material could become a hazardous waste if mixed or contaminated with a hazardous waste or other substance(s). It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

## 14. TRANSPORT INFORMATION

**49 CFR 172.101:**

**DOT:**

**Transport Information:** This material when transported via US commerce would be regulated by DOT Regulations.

<b>Proper shipping name:</b>	Fuel Oil, No. 2
<b>UN/identification No:</b>	NA 1993
<b>Hazard Class:</b>	3
<b>Packing group:</b>	III
<b>DOT reportable quantity (lbs):</b>	Not applicable.

<b>Proper shipping name:</b>	Fuel Oil, No. 2
<b>UN/identification No:</b>	NA 1993
<b>Hazard Class:</b>	3
<b>Packing group:</b>	III

## 15. REGULATORY INFORMATION

**US Federal Regulatory Information:**

MSDS ID NO.: 0291MAR019

Product name: Marathon No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max

US TSCA Chemical Inventory Section 8(b):

This product and/or its components are listed on the TSCA Chemical Inventory.

OSHA Hazard Communication Standard:

This product has been evaluated and determined to be hazardous as defined in OSHA's Hazard Communication Standard.

**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:**

This product contains the following component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Saturated Hydrocarbons	NA
Aromatic Hydrocarbons	NA
Unsaturated Hydrocarbons	NA
Naphthalene	NA

**SARA Section 304:**

This product contains the following component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Saturated Hydrocarbons	NA
Aromatic Hydrocarbons	NA
Unsaturated Hydrocarbons	NA
Naphthalene	= 100 lb final RQ = 45.4 kg final RQ

**SARA Section 311/312**

The following EPA hazard categories apply to this product:

Acute Health Hazard  
Fire Hazard  
Chronic Health Hazard

**SARA Section 313:**

This product contains the following component(s) that may be subject to reporting on the Toxic Release Inventory (TRI) From R:

Name	CERCLA/SARA 313 Emission reporting:
Saturated Hydrocarbons	None
Aromatic Hydrocarbons	None
Unsaturated Hydrocarbons	None
Naphthalene	= 0.1 % de minimis concentration

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

**Saturated Hydrocarbons**

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To-Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.

### Saturated Hydrocarbons

Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

### Aromatic Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

### Unsaturated Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

### Naphthalene

Louisiana Right-To-Know:	Not Listed
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**Saturated Hydrocarbons**

California Proposition 65: carcinogen, initial date 4/19/02

New Jersey Right-To-Know: sn 1322  
Pennsylvania Right-To-Know: Environmental hazard  
Massachusetts Right-To Know: Present

Florida substance List: Not Listed.  
Rhode Island Right-To-Know: Toxic; Flammable  
Michigan critical materials register list: Not Listed.  
Massachusetts Extraordinarily Hazardous Substances: Not Listed

California - Regulated Carcinogens: Not Listed  
Pennsylvania RTK - Special Hazardous Substances: Not Listed  
New Jersey - Special Hazardous Substances: carcinogen

New Jersey - Environmental Hazardous Substances List: SN 1322 TPQ 500 lb  
Illinois - Toxic Air Contaminants: Present  
New York - Reporting of Releases Part 597 - List of Hazardous Substances: = 1 lb RQ land/water  
= 100 lb RQ air

**Canadian Regulatory Information:**

Canada DSL/NDL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Naphthalene	B4, D2A	1 %

**NOTE:** Not Applicable.

**16. OTHER INFORMATION**

**Additional information:** No data available.

**Prepared by:** Mark S. Swanson, Manager, Toxicology and Product Safety

The information and recommendations contained herein are based upon tests believed to be reliable. However, Marathon Petroleum Company LP (MPC) does not guarantee their accuracy or completeness nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose. Adjustment to conform to actual conditions of usage may be required. MPC assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.

**End of Safety Data Sheet**



## SAFETY DATA SHEET (SDS): LIMESTONE

### SECTION I - IDENTIFICATION

PRODUCT IDENTIFIER	TRADE NAME	OTHER SYNONYMS
Limestone	Crushed Stone	Sweet Rock, Aggregate, Aglime, Barn Lime, Coverstone, Fluing Agent, Flexible Base, Manufactured Sand, Mineral Filler, Screenings, Limestone CTB

#### RECOMMENDED USE AND RESTRICTION ON USE

Used for construction purposes

This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications.

#### MANUFACTURER/SUPPLIER INFORMATION

Martin Marietta Materials  
2710 Wycliff Road  
Raleigh, North Carolina 27607  
Phone: 919-781-4550

For additional health, safety or regulatory information and other emergency situations, call 919-781-4550

### SECTION II - HAZARD(S) IDENTIFICATION

#### HAZARD CLASSIFICATION:

Category 1A Carcinogen

Category 1 Specific Target Organ Toxicity (STOT) following repeated exposures

Category 1 Eye Damage

Category 2 Skin Irritant



SIGNAL WORD: DANGER

#### HAZARD STATEMENTS:

May cause cancer by inhalation.

Causes damage to lungs, kidneys and autoimmune system through prolonged or repeated exposure by inhalation.

Causes skin irritation and serious eye damage.

#### PRECAUTIONARY STATEMENTS

Do not handle until the safety information presented in this SDS has been read and understood.

Do not breathe dusts or mists. Do not eat, drink or smoke while manually handling this product. Wash skin thoroughly after manually handling.

If on skin: Rinse skin after manually handling and wash contaminated clothing if there is potential for direct skin contact before reuse.

If swallowed: If gastrointestinal discomfort occurs and if person is conscious, give a large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit.

If inhaled excessively: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do, and continue rinsing.

If exposed, concerned, unwell or irritation of the eyes, skin, mouth or throat/nasal passage persist: Get medical attention.

Wear eye protection and respiratory protection following this SDS, NIOSH guidelines and other applicable regulations. Use protective gloves if manually handling the product.

Avoid creating dust when handling, using or storing. Use with adequate ventilation to keep exposure below recommended exposure limits.

Dispose of product in accordance with local, regional, national or international regulations.

Please refer to Section XI for details of specific health effects of the components.

**SECTION III – COMPOSITION/INFORMATION ON INGREDIENTS**

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO	% by weight (approx)
Limestone	1317-65-3	80-99
Silicon Dioxide <sup>(1)</sup> , SiO <sub>2</sub>	7631-86-9	0-10
Aluminum Oxide, Al <sub>2</sub> O <sub>3</sub>	1344-28-1	<1
Ferric Oxide, Fe <sub>2</sub> O <sub>3</sub>	1309-37-1	<1
Magnesium Oxide, MgO	1309-48-4	0-8
Calcium Oxide, CaO	1305-78-8	0-43
Sodium Oxide, Na <sub>2</sub> O	1313-59-3	<1
Potassium Oxide, K <sub>2</sub> O	12136-45-7	<1
Calcium Carbonate, CaCO <sub>3</sub>	471-34-1	40-100

(1): The composition of SiO<sub>2</sub> may be up to 100% crystalline silica

**SECTION IV – FIRST-AID MEASURES**

**INHALATION:** If excessive inhalation occurs, remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or develops later.

**EYES:** Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Remove contact lenses, if present and easy to do, and continue rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or develops later.

**SKIN:** Rinse skin with soap and water after manually handling and wash contaminated clothing if there is potential for direct skin contact. Contact a physician if irritation persists or develops later.

**INGESTION:** If gastrointestinal discomfort occurs and if person is conscious, give a large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get medical attention.

**SIGNS AND SYMPTOMS OF EXPOSURE:** There are generally no signs or symptoms of exposure to respirable crystalline silica. Often, chronic silicosis has no symptoms. The symptoms of chronic silicosis, if present, are shortness of breath, wheezing, cough and sputum production. The symptoms of acute silicosis which can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as 6 months, are the same as those associated with chronic silicosis; additionally, weight loss and fever may also occur. The symptoms of scleroderma, an autoimmune disease, include thickening and stiffness of the skin, particularly in the fingers, shortness of breath, difficulty swallowing and joint problems.

Direct skin and eye contact with dust may cause irritation by mechanical abrasion. Some components of the product are also known to cause corrosive effects to skin, eyes and mucous membranes. Ingestion of large amounts may cause gastrointestinal irritation and blockage. Inhalation of dust may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits. Repeated excessive exposure may cause pneumoconiosis, such as silicosis and other respiratory effects.

**SECTION V – FIRE-FIGHTING MEASURES**

**EXTINGUISHING AGENT**

Not flammable; use extinguishing media compatible with surrounding fire.

**UNUSUAL FIRE AND EXPLOSION HAZARD**

Contact with powerful oxidizing agents may cause fire and/or explosions (see Section X of this SDS). While individual components are known to react vigorously with water to produce heat, this is not expected from the limestone.

**SPECIAL FIRE FIGHTING PROCEDURES**

None known

**HAZARDOUS COMBUSTION PRODUCTS**

None known

**SECTION VI – ACCIDENTAL RELEASE MEASURES****STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Persons involved in cleaning should first follow the precautions defined in Section VII of the SDS. Spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust and other components that may pose inhalation hazards. Do not dry sweep spilled material. Collect the material using a method that does not produce dust such as a High-Efficiency Particulate Air (HEPA) vacuum or thoroughly wetting down the dust before cleaning up. Wear appropriate personal protective equipment as specified in Section VIII including appropriate respirators during and following clean up or whenever airborne dust is present to ensure worker exposures remain below occupational exposure limits (OELs - Refer to Section VIII).

Place the dust in a covered container appropriate for disposal. Dispose of the dust according to federal, state and local regulations.

This product is not subject to the reporting requirements of SARA Title III Section 313, and 40 CFR 372.

**SECTION VII – HANDLING AND STORAGE**

This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications. Follow protective controls set forth in Section VIII of this SDS when handling this product. Dust containing respirable crystalline silica and other components that may be corrosive/irritant may be generated during processing, handling and storage. Use good housekeeping procedures to prevent the accumulation of dust in the workplace.

Do not breathe dust. Avoid contact with skin and eyes. Do not store near food or beverages or smoking materials. Do not stand on piles of materials; it may be unstable.

Use adequate ventilation and dust collection equipment and ensure that the dust collection system is adequate to reduce airborne dust levels to below the appropriate OELs. If the airborne dust levels are above the appropriate OELs, use respiratory protection during the establishment of engineering controls. Refer to Section VIII - Exposure Controls/Personal Protection for further information.

In accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, 1928.21), state, and/or local right-to-know laws and regulations, familiarize your employees with this SDS and the information contained herein. Warn your employees, your customers and other third parties (in case of resale or distribution to others) of the potential health risks associated with the use of this product and train them in the appropriate use of personal protective equipment and engineering controls, which will reduce their risks of exposure.

See also ASTM International standard practice E 1132-06, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica."

For safe handling and use of this product for Hydraulic Fracturing, please see the OSHA/NIOSH Hazard Alert Worker Exposure to Silica during Hydraulic Fracturing DHHS (NIOSH) Publication No. 2012-166 (2012).  
[http://www.osha.gov/dts/hazardalerts/hydraulic\\_frac\\_hazard\\_alert.pdf](http://www.osha.gov/dts/hazardalerts/hydraulic_frac_hazard_alert.pdf)

**SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Airborne OELs for Components of Limestone:**

COMPONENT(S) CHEMICAL NAME	MSHA/OSHA PEL	ACGIH TLV-TWA	NIOSH REL
Limestone	(T) 15 mg/m <sup>3</sup> , (R) 5 mg/m <sup>3</sup>	-	(T) 10 mg/m <sup>3</sup> , (R) 5 mg/m <sup>3</sup>
Silicon Dioxide, SiO <sub>2</sub>	(R) 10 mg/m <sup>3</sup> / (% SiO <sub>2</sub> +2) <sup>§</sup>	(R) 0.025 mg/m <sup>3</sup> #	(R) 0.05 mg/m <sup>3</sup> #
Aluminum Oxide, Al <sub>2</sub> O <sub>3</sub>	(T) 15 mg/m <sup>3</sup> , (R) 5 mg/m <sup>3</sup>	(1) (R) 1 mg/m <sup>3</sup>	-
Ferric Oxide, Fe <sub>2</sub> O <sub>3</sub>	(2) 10 mg/m <sup>3</sup>	(R) 5 mg/m <sup>3</sup>	(3) 5 mg/m <sup>3</sup>
Magnesium Oxide, MgO	(4) 15 mg/m <sup>3</sup>	(I) 10 mg/m <sup>3</sup>	-
Calcium Oxide, CaO	5 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>
Sodium Oxide, Na <sub>2</sub> O (5)	2 mg/m <sup>3</sup>	(C) 2 mg/m <sup>3</sup>	(C) 2 mg/m <sup>3</sup>
Potassium Oxide, K <sub>2</sub> O	-	(6) (C) 2 mg/m <sup>3</sup>	(6) (C) 2 mg/m <sup>3</sup>
Calcium Carbonate, CaCO <sub>3</sub>	(T) 15 mg/m <sup>3</sup> , (R) 5 mg/m <sup>3</sup>	-	(T) 10 mg/m <sup>3</sup> , (R) 5 mg/m <sup>3</sup>

§: Crystalline silica is normally measured as respirable dust. The OSHA/MSHA standard also presents a formula for calculation of the PEL based on total dust: 30 mg/m<sup>3</sup> / (% SiO<sub>2</sub>+2). The OSHA/MSHA PEL listed is for dust containing crystalline silica (quartz) and is based on the silica content of the respirable dust sample. The OSHA/MSHA PEL for crystalline silica as tridymite and cristobalite is one-half the PEL for crystalline silica (quartz).  
 # The ACGIH and NIOSH limits are for crystalline silica (quartz), independent of the dust concentration. The ACGIH TLV for crystalline silica as cristobalite is equal to the TLV for crystalline silica as quartz. In 2005, ACGIH withdrew the TLV for crystalline silica as tridymite. Refer to Section X for thermal stability. information for crystalline silica (quartz).

- (1): Limits based on Aluminum Metal and Insoluble Compounds.
- (2): As Iron Oxide Fume.
- (3): Dust and fume, as Iron
- (4): As Magnesium Oxide Fume Total Particulate.
- (5): Based on Sodium Hydroxide.
- (6): Based on Potassium Hydroxide.
- (R): Respirable Fraction.
- (T): Total Dust.
- (I): Inhalable Fraction.
- (C): Ceiling Limit

**Airborne OELs for Inert/Nuisance Dust:**

Standard	Respirable Dust	Total Dust
MSHA/OSHA PEL (as Inert or Nuisance Dust)	5 mg/m <sup>3</sup>	15 mg/m <sup>3</sup>
ACGIH TLV (as Particles Not Otherwise Specified)	3 mg/m <sup>3</sup>	*10 mg/m <sup>3</sup>
NIOSH REL (Particulates Not Otherwise Regulated)	-	-

Note: The limits for Inert Dust are provided as guidelines. Nuisance dust is limited to particulates not known to cause systemic injury or illness.  
 \* The TLV provided is for inhalable particles not otherwise specified.

**ENGINEERING CONTROLS**

Ventilation: Use local exhaust, general ventilation or natural ventilation adequate to maintain exposures below appropriate exposure limits.

Other control measures: Respirable dust and crystalline silica levels should be monitored regularly. Dust and crystalline silica levels in excess of appropriate exposure limits should be reduced by implementing feasible engineering controls, including (but not limited to) dust suppression (wetting), ventilation, process enclosure and enclosed employee work stations.

**EYE/FACE PROTECTION**

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated. If irritation persists, get medical attention immediately. There is potential for severe eye irritation if exposed to excessive concentrations of dust for those using contact lenses.

**SKIN PROTECTION**

Use appropriate protective gloves if manually handling the product.

**SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION, CONTD.****RESPIRATORY PROTECTION****Respirator Recommendations:**

For respirable crystalline silica levels that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved particulate filter respirator must be worn. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements. For additional information contact NIOSH at 1-800-356-4674 or visit website: <http://www.cdc.gov/niosh/npg> (search for crystalline silica). See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection," 29 CFR 1910.134 and 1926.103, and 42 CFR 84.

NIOSH recommendations for respiratory protection include:

**Up to 0.5 mg/m<sup>3</sup>:**

(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100.

**Up to 1.25 mg/m<sup>3</sup>:**

(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate (100-series) filter.

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

**Up to 2.5 mg/m<sup>3</sup>:**

(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.

(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter

**Up to 25 mg/m<sup>3</sup>:**

(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions (50 mg/m<sup>3</sup> for crystalline silica-quartz): A self-contained breathing apparatus (SCBA) that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Escape from unknown or IDLH conditions: An air-purifying, full-face piece respirator with a high-efficiency particulate (100-series) filter or any appropriate escape-type, self-contained breathing apparatus.

If the workplace airborne crystalline silica concentration is unknown for a given task, conduct air monitoring to determine the appropriate level of respiratory protection to be worn. Consult with a certified industrial hygienist, your insurance risk manager or the OSHA Consultative Services group for detailed information. Ensure appropriate respirators are worn, as needed, during and following the task, including clean up or whenever airborne dust is present, to ensure worker exposures remain below OELs.

**GENERAL HYGIENE CONSIDERATIONS**

There are no known hazards associated with this material when used as recommended. Following the guidelines in this SDS are recognized as good industrial hygiene practices. Avoid breathing dust. Avoid skin and eye contact. Wash dust-exposed skin with soap and water before eating, drinking, smoking and using toilet facilities. Wash work clothes after each use.

**SECTION IX— PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE</b> Limestone is a mixture of fine to coarse angular white to gray particles ranging in size from powder to small stones	<b>ODOR AND ODOR THRESHOLD</b> Odorless to musty odor and not applicable
<b>pH AND VISCOSITY</b> Not applicable	<b>MELTING POINT/FREEZING POINT</b> Not applicable
<b>BOILING POINT AND RANGE</b> Not applicable	<b>FLASH POINT AND FLAMMABILITY</b> Not applicable
<b>FLAMMABILITY/EXPLOSIVE LIMITS AND AUTOIGNITION TEMPERATURE</b> Not applicable	<b>EVAPORATION RATE AND DECOMPOSITION TEMPERATURE</b> Not applicable
<b>VAPOR PRESSURE AND VAPOR DENSITY IN AIR</b> Not applicable	<b>SPECIFIC GRAVITY.</b> 2.5-2.75
<b>SOLUBILITY IN WATER</b> Insoluble	<b>PARTITION COEFFICIENT: N-OCTANOL/WATER</b> Not applicable

**SECTION X – STABILITY AND REACTIVITY**

<b>STABILITY</b> Stable	<b>CONDITIONS TO AVOID</b> Contact with incompatible materials (see below).
<b>THERMAL STABILITY</b> If crystalline silica (quartz) is heated to more than 870°C (1598°F), it can change to a form of crystalline silica known as tridymite, and if crystalline silica (quartz) is heated to more than 1470°C (2678°F), it can change to a form of crystalline silica known as cristobalite.	
<b>INCOMPATIBILITY (Materials to avoid)</b> Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Some components of limestone may react vigorously with water.	
<b>HAZARDOUS DECOMPOSITION PRODUCTS</b> Silica dissolves in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.	
<b>HAZARDOUS POLYMERIZATION</b> Not known to polymerize	

**SECTION XI – TOXICOLOGICAL INFORMATION**

**Health Effects:** The information below represents an overview of health effects caused by overexposure to one or more components in limestone.

**Primary routes(s) of exposure:**       Inhalation       Skin       Ingestion

**EYE CONTACT:** Direct contact with dust may cause irritation by mechanical abrasion or corrosive action. Conjunctivitis may occur.

**SKIN CONTACT:** Direct contact may cause irritation by mechanical abrasion. Some components of material are also known to cause corrosive effects to skin and mucous membranes.

**SKIN ABSORPTION:** Not expected to be a significant route of exposure.

**INGESTION:** Small amounts (a tablespoonful) swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

**INHALATION:** Dust may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits.

**SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.****MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions. Smoking and obstructive/restrictive lung diseases may also exacerbate the effects of excessive exposure to this product.

This product is a mixture of components. The composition percentages are listed in Section III. Toxicological information for each component is listed below:

**Silicon Dioxide** It is comprised of amorphous and crystalline forms of silica. In some batches, crystalline silica may represent up to 100% of silicon dioxide.

Exposure route: Eyes, respiratory system.

Target organs: Eyes, skin, respiratory system.

ACGIH, MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate exposure limits. Lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions as described under medical conditions aggravated by exposure.

**A. SILICOSIS**

The major concern is silicosis (lung disease), caused by the inhalation and retention of respirable crystalline silica dust. Silicosis leads to conditions such as lung fibrosis and reduced pulmonary function. The form and severity in which silicosis manifests itself, depends in part on the type and extent of exposure to silica dusts: chronic, accelerated and acute forms are recognized. In later stages the critical condition may become disabling and potentially fatal. Restrictive and/or obstructive changes in lung function may occur due to exposure. A risk associated with silicosis is development of pulmonary tuberculosis (silico-tuberculosis). Respiratory insufficiencies due to massive fibrosis and reduced pulmonary function, possibly with accompanying heart failure, are other potential causes of death due to silicosis.

Chronic or Ordinary Silicosis is the most common form of silicosis and can occur after many years of exposure to levels above the occupational exposure limits for airborne respirable crystalline silica dust. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. Symptoms of silicosis may include (but are not limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; heart enlargement and/or failure. It is further defined as either simple or complicated silicosis.

Simple Silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF).

Complicated Silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease (cor pulmonale) secondary to the lung disease.

Accelerated Silicosis can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of the initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that the lung lesions appear earlier and the progression is more rapid.

Acute Silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is a rapidly progressive, incurable lung disease and is typically fatal.

## SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.

**B. CANCER**

IARC - The International Agency for Research on Cancer ("IARC") concluded that there is "sufficient evidence in humans for the carcinogenicity of crystalline silica in the form of quartz or cristobalite", there is "sufficient evidence in experimental animals for the carcinogenicity of quartz dust" and that there is "limited evidence in experimental animals for the carcinogenicity of tridymite dust and cristobalite dust." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite dust is *carcinogenic to humans (Group 1)*." The IARC evaluation noted that not all industrial circumstances studied evidenced carcinogenicity. The monograph also stated that "Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C, "Silica Dust, Crystalline, in the Form of Quartz or Cristobalite" (2012).

NTP - In its Eleventh Annual Report on Carcinogens, concluded that respirable crystalline silica is known to be a human carcinogen, based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to respirable crystalline silica and increased lung cancer rates in workers exposed to crystalline silica dust.

OSHA - Crystalline silica is not on the OSHA carcinogen list.

CALIFORNIA PROPOSITION 65 - Crystalline silica in October 1996 was listed on the Safe Drinking Water and Toxic Enforcement ACT of 1986 as a chemical known to the state to cause cancer or reproductive toxicity.

There have been many articles published on the carcinogenicity of crystalline silica, which the reader should consult for additional information; the following are examples of recently published articles: (1) "Dose-Response Meta-Analysis of Silica and Lung Cancer", *Cancer Causes Control*, (20):925-33 (2009); (2) "Occupational Silica Exposure and Lung Cancer Risk: A Review of Epidemiological Studies 1996-2005", *Ann Oncol*, (17) 1039-50 (2006); (3) "Lung Cancer Among Industrial Sand Workers Exposed to Crystalline Silica", *Am J Epidemiol*, (153) 695-703 (2001); (4) "Crystalline Silica and The Risk of Lung Cancer in The Potteries", *Occup Environ Med*, (55) 779-785 (1998); (5) "Is Silicosis Required for Silica-Associated Lung Cancer?", *American Journal of Industrial Medicine*, (37) 252- 259 (2000); (6) "Silica, Silicosis, and Lung Cancer: A Risk Assessment", *American Journal of Industrial Medicine*, (38) 8-18 (2000); (7) "Silica, Silicosis, and Lung Cancer: A Response to a Recent Working Group Report", *Journal of Occupational and Environmental Medicine*, (42) 704-720 (2000).

**C. AUTOIMMUNE DISEASES**

There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders, -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys. For a review of the subject, the following may be consulted: (1) "Antinuclear Antibody and Rheumatoid Factor in Silica-Exposed Workers", *Arh Hig Rada Toksikol*, (60) 185-90 (2009); (2) "Occupational Exposure to Crystalline Silica and Autoimmune Disease", *Environmental Health Perspectives*, (107) Supplement 5, 793-802 (1999); (3) "Occupational Scleroderma", *Current Opinion in Rheumatology*, (11) 490-494 (1999); (4) "Connective Tissue Disease and Silicosis", *Am J Ind Med*, (35), 375-381 (1999).

**D. TUBERCULOSIS**

Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to persons with tuberculosis. The following may be consulted for further information: (1) "Tuberculosis and Silicosis: Epidemiology, Diagnosis and Chemoprophylaxis", *J Bras Pneumol*, (34) 959-66 (2008); (2) *Occupational Lung Disorders*, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994); (3) "Risk of Pulmonary Tuberculosis Relative to Silicosis and Exposure to Silica Dust in South African Gold Miners," *Occup Environ Med*, (55) 496-502 (1998); (4) "Occupational Risk Factors for Developing Tuberculosis", *Am J Ind Med*, (30) 148-154 (1996).

**E. KIDNEY DISEASE**

There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis is associated with the increased incidence of kidney diseases, including end stage renal disease. For additional information on the subject, the following may be consulted: (1) "Mortality from Lung and Kidney Disease in a Cohort of North American Industrial Sand Workers: An Update", *Ann Occup Hyg*, (49) 367-73 (2005); (2) "Kidney Disease and Silicosis", *Nephron*, (85) 14-19 (2000); (3) "End Stage Renal Disease Among Ceramic Workers Exposed to Silica", *Occup Environ Med*, (56) 559-561 (1999); (4) "Kidney Disease and Arthritis in a Cohort Study of Workers Exposed to Silica", *Epidemiology*, (12) 405-412 (2001).

**SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.****F. NON-MALIGNANT RESPIRATORY DISEASES**

NIOSH has cited the results of studies that report an association between dusts found in various mining operations and non-malignant respiratory disease, particularly among smokers, including bronchitis, emphysema, and small airways disease. *NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica*, published in April 2002, available from NIOSH, 4676 Columbia Parkway, Cincinnati, OH 45226, or at <http://www.cdc.gov/niosh/02-129A.html>.

Respirable dust containing newly broken particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken pieces of silica.

**Aluminum Oxide:**

Exposure route: Inhalation, ingestion, eye/skin contact.

Target organs: Respiratory system, gastrointestinal system, eyes, skin.

Acute effect: Inhalation or ingestion of high concentrations of this substance may cause gastrointestinal and/or upper respiratory tract irritation. Eye and skin irritant.

Chronic effect/carcinogenicity: Aluminum oxide is not classifiable as a human carcinogen. On occasion workers chronically exposed to aluminum-containing dusts or fumes have developed severe pulmonary reactions including fibrosis, emphysema and pneumothorax. Long-term exposure may have effects on the central nervous system.

**Sodium Oxide:**

Exposure route: Inhalation, ingestion, eye/skin contact.

Target organs: Respiratory system, gastrointestinal system, eyes, skin.

Acute effect: Corrosive – Sodium oxide reacts violently with water to form sodium hydroxide. Causes burns of skin, eyes, respiratory and gastrointestinal tracts, extremely destructive to mucous membranes.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

**Iron Oxide: (Ferric Oxide)**

Exposure route: Inhalation, ingestion, skin

Target organs: Respiratory system, skin, eyes, neurological system

Acute effect: Major findings: stupor, shock, acidosis, hematemesis, bloody diarrhea or coma. Minor findings: vomiting, diarrhea, mild lethargy. Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis. Experimental work in animals exposed by intratracheal injection or by inhalation to iron oxide mixed with less than 5% silica has shown no evidence of fibrosis produced in lung tissue.

Chronic effect/carcinogenicity: Irritability, nausea or vomiting, and normocytic anemia. When exposed to levels greater than 50 to 100 milligram per day, it can result in pathological deposition of iron in the body tissues causing fibrosis of the pancreas, diabetes mellitus, and liver cirrhosis. Workers exposed to iron oxide fume and silica may develop a "mixed dust pneumoconiosis." Not classifiable as human carcinogen.

**Potassium Oxide:**

Exposure route: Inhalation, ingestion, eye/skin contact.

Target organs: Respiratory system, gastrointestinal system, eyes, skin.

Acute effect: Corrosive – Potassium oxide reacts violently with water to produce potassium hydroxide. If inhaled, causes sore throat, cough, burning sensation and shortness of breath. Contact with skin produces pain and blisters. Severe deep burns, redness and pain occur with eye contact. Ingestion results in burning sensations, abdominal pain, shock or collapse.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

**SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.**

Calcium Oxide:

Exposure route: Inhalation, ingestion, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: Direct contact with tissues, can result in burns and severe irritation because of its high reactivity and alkalinity. Major complaints of workers exposed to lime consist of irritation of the skin and eyes, although inflammation of the respiratory passages, ulceration and perforation of the nasal septum, and even pneumonia has been attributed to inhalation of the dust.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

Magnesium Oxide:

Exposure route: Inhalation, eye/skin contact.

Target organs: Eyes, respiratory system.

Acute effect: Magnesium oxide dust caused slight irritation of the eyes and nose, conjunctivitis, inflammation of the mucous membrane, and coughing up discolored sputum after industrial exposures amongst workers exposed to an unspecified concentration of MgO.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

Calcium Carbonate:

Exposure route: Inhalation, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: Irritation of the eyes, skin and respiratory system and cough. It has been reported that there may be a silicosis risk when using impure limestone containing in excess of 3% quartz. However, it is claimed that pure calcium carbonate does not cause pneumoconiosis. Adverse health effects have generally not been reported in literature among workers using CaCO<sub>3</sub>.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen

Acute Toxicity Estimates for Limestone – Not Available

**SECTION XII – ECOLOGICAL INFORMATION**

No data available for this product.

**SECTION XIII – DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL METHOD**

Collect and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

The above information applies to Martin Marietta Materials product only as sold. The product may be contaminated during use and it is the responsibility of the user to assess the appropriate disposal method in that situation.

**SECTION XIV – TRANSPORT INFORMATION**

**DOT HAZARD CLASSIFICATION**

None

**PLACARD REQUIRED**

None

**LABEL REQUIRED**

Label as required by the OSHA Hazard Communication standard {29 CFR 1910.1200(f)}, and applicable state and local regulations.

**SECTION XV – REGULATORY INFORMATION**

**OSHA:** Crystalline Silica is not listed as a carcinogen.

**SARA Title III:** Section 311 and 312: Immediate health hazard and delayed health hazard.

**TSCA:** All components of the product appear on the EPA TSCA chemical substance inventory.

**RCRA:** Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 *et seq.*

**CERCLA:** Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 40 CFR §302.4

**EPCRA (Emergency Planning and Community Right to Know Act):** Crystalline silica (quartz) is not an extremely hazardous substance under regulations of the Emergency Planning and Community Right to Know Act, 40 CFR Part 355, Appendices A and B and is not a toxic chemical subject to the requirements of Section 313.

**Clean Air Act:** Crystalline silica (quartz) mined and processed by Martin Marietta Materials was not processed with or does not contain any Class I or Class II ozone depleting substances.

**FDA:** Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3). (The FDA standard primarily applies to products containing silica used in the coatings of food contact surfaces).

**California Proposition 65:** Respirable crystalline silica (quartz) is classified as a substance known to the state of California to be a carcinogen.

**Massachusetts Toxic Use Reduction Act:** Respirable crystalline silica is considered toxic per the Massachusetts Toxic Use Reduction Act when used in abrasive blasting and molding.

**Pennsylvania Worker and Community Right to Know Act:** Quartz is considered hazardous for purposes of the Act, but it is not a special hazardous substance or an environmental hazardous substance.

**SECTION XVI – OTHER INFORMATION****DEFINITIONS OF ACRONYMS/ABBREVIATIONS**

ACGIH: American Conference of Governmental Industrial Hygienists

ANSI: American National Standards Institute

APF: Assigned Protection Factor

California REL: California Inhalation Reference Exposure Limit

CAS: Chemical Abstracts Service

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act

CFR: US Code of Federal Regulations

DHHS: Department of Health and Human Services

EPA: Environmental Protection Agency

EPCRA: Emergency Planning and Community Right to Know Act

FDA: Food and Drug Administration

GHS: Globally Harmonized System

HEPA: High-Efficiency Particulate Air

IARC: International Agency for Research on Cancer

IDLH: Immediately Dangerous to Life and Health

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health, US Department of Health and Human Services

NIOSH REL: NIOSH Recommended Exposure Limit

NTP: National Toxicology Program

OEL: Occupational Exposure Limit

OSHA: Occupational Safety and Health Administration, US Department of Labor

PEL: Permissible Exposure Limit

PMF: Progressive Massive Fibrosis

RCRA: Resource Conservation and Recovery Act

SARA Title III: Title III of the Superfund Amendments and Reauthorization Act, 1986

SDS: Safety Data Sheet

STOT: Specific Target Organ Toxicity

TLV: Threshold Limit Value

TSCA: Toxic Substance Control Act

TWA: Time-Weighted Average

**SECTION XVI – OTHER INFORMATION, CONTD.**

**User's Responsibility:** The OSHA Hazard Communication Standard 29 CFR 1910.1200 requires that this SDS be made available to your employees who handle or may be exposed to this product. Educate and train your employees regarding applicable precautions. Instruct your employees to handle this product properly.

**Disclaimer:** The information contained in this document applies to this specific material as supplied and Martin Marietta Materials believes that the information contained in this SDS is accurate. The suggested precautions and recommendations are based on recognized good work practices and experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance as not all use circumstances can be anticipated. It may not be valid for this material if it is used in combination with other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for one's own particular use. Since the actual use of the product described herein is beyond our control, Martin Marietta Materials, assumes no liability arising out of the use of the product by others. Appropriate warnings and safe handling procedures should be provided to handlers and users. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulation, rules or insurance requirement. However, product must not be used in a manner which could result in harm.

An electronic version of this SDS is available at [www.martinmarietta.com](http://www.martinmarietta.com). More information on the effects of crystalline silica exposure may be obtained from OSHA (phone number: 1-800-321-OSHA; website: <http://www.osha.gov>) or from NIOSH (phone number: 1-800-35-NIOSH; website: <http://www.cdc.gov/niosh>).

DATE OF PREPARATION 3/2015 (Combines Martin Marietta Materials MSDS for Limestone and TXI MSDS for Limestone)  
REPLACES 11/2007 (MMM MSDS) and 02/2014 (TXI MSDS)

NO WARRANTY, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE IS MADE



## SAFETY DATA SHEET (SDS): SAND & GRAVEL

### SECTION I – IDENTIFICATION

PRODUCT IDENTIFIER	TRADE NAME	OTHER SYNONYMS
Natural Sand & Gravel, Gravel	Gravel Sand	Construction Aggregate, River Rock, Pea Gravel, Course Aggregate

#### RECOMMENDED USE AND RESTRICTION ON USE

Used for construction purposes

This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications.

#### MANUFACTURER/SUPPLIER INFORMATION

Martin Marietta Materials  
2710 Wycliff Road  
Raleigh, North Carolina 27607  
Phone: 919-781-4550

For additional health, safety or regulatory information and other emergency situations, call 919-781-4550

### SECTION II – HAZARD(S) IDENTIFICATION

#### HAZARD CLASSIFICATION:

Category 1A Carcinogen

Category 1 Specific Target Organ Toxicity (STOT) following repeated exposures

Category 1 Eye Damage

Category 1 Skin Corrosive



SIGNAL WORD: DANGER

#### HAZARD STATEMENTS:

May cause cancer by inhalation.

Causes damage to lungs, kidneys and autoimmune system through prolonged or repeated exposure by inhalation.

Causes severe skin burns and serious eye damage.

#### PRECAUTIONARY STATEMENTS

Do not handle until the safety information presented in this SDS has been read and understood.

Do not breathe dusts or mists. Do not eat, drink or smoke while manually handling this product. Wash skin thoroughly after manually handling.

If swallowed: Rinse mouth and do not induce vomiting.

If on skin (or hair): Rinse skin after manually handling and wash contaminated clothing if there is potential for direct skin contact before reuse.

If inhaled excessively: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do, and continue rinsing.

If exposed, concerned, unwell or irritation of the eyes, skin, mouth or throat/nasal passage persist: Get medical attention.

Wear eye protection and respiratory protection following this SDS, NIOSH guidelines and other applicable regulations. Use protective gloves if manually handling the product.

Avoid creating dust when handling, using or storing. Use with adequate ventilation to keep exposure below recommended exposure limits.

Dispose of product in accordance with local, regional, national or international regulations.

Please refer to Section XI for details of specific health effects of the components.

**SECTION III – COMPOSITION/INFORMATION ON INGREDIENTS**

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO	% by weight (approx)
Silicon Dioxide, SiO <sub>2</sub> <sup>(1)</sup>	7631-86-9	0-100
Aluminum Oxide, Al <sub>2</sub> O <sub>3</sub>	1344-28-1	0-16
Ferrous Oxide, FeO	1345-25-1	0-3
Ferric Oxide, Fe <sub>2</sub> O <sub>3</sub>	1309-37-1	0-5
Magnesium Oxide, MgO	1309-48-4	0-22
Calcium Oxide, CaO	1305-78-8	0-43
Sodium Oxide, Na <sub>2</sub> O	1313-59-3	0-2
Potassium Oxide, K <sub>2</sub> O	12136-45-7	0-4
Calcium Carbonate, CaCO <sub>3</sub>	471-34-1	0-48

(1): The composition of SiO<sub>2</sub> may be up to 100% crystalline silica

**SECTION IV – FIRST-AID MEASURES**

**INHALATION:** If excessive inhalation occurs, remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or develops later.

**EYES:** Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Remove contact lenses, if present and easy to do, and continue rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or develops later.

**SKIN:** Rinse skin with soap and water after manually handling and wash contaminated clothing if there is potential for direct skin contact. Contact a physician if irritation persists or develops later.

**INGESTION:** If swallowed, rinse mouth and do not induce vomiting. If gastrointestinal discomfort occurs, persists or develops later, get medical attention.

**SIGNS AND SYMPTOMS OF EXPOSURE:** There are generally no signs or symptoms of exposure to respirable crystalline silica. Often, chronic silicosis has no symptoms. The symptoms of chronic silicosis, if present, are shortness of breath, wheezing, cough and sputum production. The symptoms of acute silicosis which can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as 6 months, are the same as those associated with chronic silicosis; additionally, weight loss and fever may also occur. The symptoms of scleroderma, an autoimmune disease, include thickening and stiffness of the skin, particularly in the fingers, shortness of breath, difficulty swallowing and joint problems.

Direct skin and eye contact with dust may cause irritation by mechanical abrasion. Some components of the product are also known to cause corrosive effects to skin, eyes and mucous membranes. Ingestion of large amounts may cause gastrointestinal irritation and blockage. Inhalation of dust may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits. Repeated excessive exposure may cause pneumoconiosis, such as silicosis and other respiratory effects.

**SECTION V – FIRE-FIGHTING MEASURES****EXTINGUISHING AGENT**

Not flammable; use extinguishing media compatible with surrounding fire.

**UNUSUAL FIRE AND EXPLOSION HAZARD**

Contact with powerful oxidizing agents may cause fire and/or explosions (see Section X of this SDS). While individual components are known to react vigorously with water to produce heat, this is not expected from the sand & gravel.

**SPECIAL FIRE FIGHTING PROCEDURES**

None known

**HAZARDOUS COMBUSTION PRODUCTS**

None known

**SECTION VI – ACCIDENTAL RELEASE MEASURES****STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Persons involved in cleaning should first follow the precautions defined in Section VII of the SDS. Spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust and other components that may pose inhalation hazards. Do not dry sweep spilled material. Collect the material using a method that does not produce dust such as a High-Efficiency Particulate Air (HEPA) vacuum or thoroughly wetting down the dust before cleaning up. Wear appropriate personal protective equipment as specified in Section VIII including appropriate respirators during and following clean up or whenever airborne dust is present to ensure worker exposures remain below occupational exposure limits (OELs - Refer to Section VIII).

Place the dust in a covered container appropriate for disposal. Dispose of the dust according to federal, state and local regulations.

This product is not subject to the reporting requirements of SARA Title III Section 313, and 40 CFR 372.

**SECTION VII – HANDLING AND STORAGE**

This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications. Follow protective controls set forth in Section VIII of this SDS when handling this product. Dust containing respirable crystalline silica and other components that may be corrosive/irritant may be generated during processing, handling and storage. Use good housekeeping procedures to prevent the accumulation of dust in the workplace.

Do not breathe dust. Avoid contact with skin and eyes. Do not store near food or beverages or smoking materials. Do not stand on piles of materials; it may be unstable.

Use adequate ventilation and dust collection equipment and ensure that the dust collection system is adequate to reduce airborne dust levels to below the appropriate OELs. If the airborne dust levels are above the appropriate OELs, use respiratory protection during the establishment of engineering controls. Refer to Section VIII - Exposure Controls/Personal Protection for further information.

In accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, 1928.21), state, and/or local right-to-know laws and regulations, familiarize your employees with this SDS and the information contained herein. Warn your employees, your customers and other third parties (in case of resale or distribution to others) of the potential health risks associated with the use of this product and train them in the appropriate use of personal protective equipment and engineering controls, which will reduce their risks of exposure.

See also ASTM International standard practice E 1132-06, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica."

For safe handling and use of this product for Hydraulic Fracturing, please see the OSHA/NIOSH Hazard Alert Worker Exposure to Silica during Hydraulic Fracturing DHHS (NIOSH) Publication No. 2012-166 (2012).  
[http://www.osha.gov/dts/hazardalerts/hydraulic\\_frac\\_hazard\\_alert.pdf](http://www.osha.gov/dts/hazardalerts/hydraulic_frac_hazard_alert.pdf)

**SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Airborne OELs for Components of Sand & Gravel:**

COMPONENT(S) CHEMICAL NAME	MSHA/OSHA PEL	ACGIH TLV-TWA	NIOSH REL
Silicón Dioxide, SiO <sub>2</sub>	(R) 10 mg/m <sup>3</sup> / (% SiO <sub>2</sub> +2) <sup>§</sup>	(R) 0.025 mg/m <sup>3</sup> #	(R) 0.05 mg/m <sup>3</sup> #
Aluminum Oxide, Al <sub>2</sub> O <sub>3</sub>	(T) 15 mg/m <sup>3</sup> , (R) 5 mg/m <sup>3</sup>	(1) (R) 1 mg/m <sup>3</sup>	-
Ferrous Oxide, FeO	-	-	-
Ferric Oxide, Fe <sub>2</sub> O <sub>3</sub>	(2) 10 mg/m <sup>3</sup>	(R) 5 mg/m <sup>3</sup>	(3) 5 mg/m <sup>3</sup>
Magnesium Oxide, MgO	(4) 15 mg/m <sup>3</sup>	(I) 10 mg/m <sup>3</sup>	-
Calcium Oxide, CaO	5 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>
Sodium Oxide, Na <sub>2</sub> O <sup>(5)</sup>	2 mg/m <sup>3</sup>	(C) 2 mg/m <sup>3</sup>	(C) 2 mg/m <sup>3</sup>
Potassium Oxide, K <sub>2</sub> O	-	(6) (C) 2 mg/m <sup>3</sup>	(6) (C) 2 mg/m <sup>3</sup>
Calcium Carbonate, CaCO <sub>3</sub>	(T) 15 mg/m <sup>3</sup> , (R) 5 mg/m <sup>3</sup>	-	(T) 10 mg/m <sup>3</sup> , (R) 5 mg/m <sup>3</sup>

§ Crystalline silica is normally measured as respirable dust. The OSHA/MSHA standard also presents a formula for calculation of the PEL based on total dust: 30 mg/m<sup>3</sup> / (% SiO<sub>2</sub>+2). The OSHA/MSHA PEL listed is for dust containing crystalline silica (quartz) and is based on the silica content of the respirable dust sample. The OSHA/MSHA PEL for crystalline silica as tridymite and cristobalite is one-half the PEL for crystalline silica (quartz).

# The ACGIH and NIOSH limits are for crystalline silica (quartz), independent of the dust concentration. The ACGIH TLV for crystalline silica as cristobalite is equal to the TLV for crystalline silica as quartz. In 2005, ACGIH withdrew the TLV for crystalline silica as tridymite. Refer to Section X for thermal stability information for crystalline silica (quartz).

- (1). Limits based on Aluminum Metal and Insoluble Compounds.
- (2). As Iron Oxide Fume.
- (3): Dust and fume, as Iron
- (4): As Magnesium Oxide Fume Total Particulate.
- (5): Based on Sodium Hydroxide.
- (6): Based on Potassium Hydroxide.
- (R). Respirable Fraction.
- (T): Total Dust.
- (I): Inhalable Fraction.
- (C): Ceiling Limit

**Airborne OELs for Inert/Nuisance Dust:**

Standard	Respirable Dust	Total Dust
MSHA/OSHA PEL (as Inert or Nuisance Dust)	5 mg/m <sup>3</sup>	15 mg/m <sup>3</sup>
ACGIH TLV (as Particles Not Otherwise Specified)	3 mg/m <sup>3</sup>	*10 mg/m <sup>3</sup>
NIOSH REL (Particulates Not Otherwise Regulated)	-	-

Note: The limits for Inert Dust are provided as guidelines. Nuisance dust is limited to particulates not known to cause systemic injury or illness.  
\* The TLV provided is for inhalable particles not otherwise specified.

**ENGINEERING CONTROLS**

Ventilation: Use local exhaust, general ventilation or natural ventilation adequate to maintain exposures below appropriate exposure limits.

Other control measures: Respirable dust and crystalline silica levels should be monitored regularly. Dust and crystalline silica levels in excess of appropriate exposure limits should be reduced by implementing feasible engineering controls, including (but not limited to) dust suppression (wetting), ventilation, process enclosure and enclosed employee work stations.

**EYE/FACE PROTECTION**

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated. If irritation persists, get medical attention immediately. There is potential for severe eye irritation if exposed to excessive concentrations of dust for those using contact lenses.

**SKIN PROTECTION**

Use appropriate protective gloves if manually handling the product.

**SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION, CONTD.****RESPIRATORY PROTECTION****Respirator Recommendations:**

For respirable crystalline silica levels that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved particulate filter respirator must be worn. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements. For additional information contact NIOSH at 1-800-356-4674 or visit website: <http://www.cdc.gov/niosh/npg> (search for crystalline silica). See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection," 29 CFR 1910.134 and 1926.103, and 42 CFR 84.

NIOSH recommendations for respiratory protection include:

**Up to 0.5 mg/m<sup>3</sup>:**

(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100.

**Up to 1.25 mg/m<sup>3</sup>:**

(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate (100-series) filter.

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

**Up to 2.5 mg/m<sup>3</sup>:**

(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.

(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter

**Up to 25 mg/m<sup>3</sup>:**

(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions (50 mg/m<sup>3</sup> for crystalline silica-quartz): A self-contained breathing apparatus (SCBA) that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Escape from unknown or IDLH conditions: An air-purifying, full-face piece respirator with a high-efficiency particulate (100-series) filter or any appropriate escape-type, self-contained breathing apparatus.

If the workplace airborne crystalline silica concentration is unknown for a given task, conduct air monitoring to determine the appropriate level of respiratory protection to be worn. Consult with a certified industrial hygienist, your insurance risk manager or the OSHA Consultative Services group for detailed information. Ensure appropriate respirators are worn, as needed, during and following the task, including clean up or whenever airborne dust is present, to ensure worker exposures remain below OELs.

**GENERAL HYGIENE CONSIDERATIONS**

There are no known hazards associated with this material when used as recommended. Following the guidelines in this SDS are recognized as good industrial hygiene practices. Avoid breathing dust. Avoid skin and eye contact. Wash dust-exposed skin with soap and water before eating, drinking, smoking and using toilet facilities. Wash work clothes after each use.

SECTION IX— PHYSICAL AND CHEMICAL PROPERTIES	
<b>APPEARANCE</b> Sand & Gravel is a mixture of angular, round or broken light or multicolored particles.	<b>ODOR AND ODOR THRESHOLD</b> Odorless and not applicable
<b>pH AND VISCOSITY</b> Not applicable	<b>MELTING POINT/FREEZING POINT</b> Not applicable
<b>BOILING POINT AND RANGE</b> Not applicable	<b>FLASH POINT AND FLAMMABILITY</b> Not applicable
<b>FLAMMABILITY/EXPLOSIVE LIMITS AND AUTOIGNITION TEMPERATURE</b> Not applicable	<b>EVAPORATION RATE AND DECOMPOSITION TEMPERATURE</b> Not applicable
<b>VAPOR PRESSURE AND VAPOR DENSITY IN AIR</b> Not applicable	<b>SPECIFIC GRAVITY.</b> 2.3-2.8
<b>SOLUBILITY IN WATER</b> Negligible	<b>PARTITION COEFFICIENT: N-OCTANOL/WATER</b> Not applicable

SECTION X – STABILITY AND REACTIVITY	
<b>STABILITY</b> Stable	<b>CONDITIONS TO AVOID</b> Contact with incompatible materials (see below).
<b>THERMAL STABILITY</b> If crystalline silica (quartz) is heated to more than 870°C (1598°F), it can change to a form of crystalline silica known as tridymite, and if crystalline silica (quartz) is heated to more than 1470°C (2678°F), it can change to a form of crystalline silica known as cristobalite.	
<b>INCOMPATIBILITY (Materials to avoid)</b> Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Some components of sand & gravel may react vigorously with water.	
<b>HAZARDOUS DECOMPOSITION PRODUCTS</b> Silica dissolves in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.	
<b>HAZARDOUS POLYMERIZATION</b> Not known to polymerize	

SECTION XI – TOXICOLOGICAL INFORMATION
Health Effects: The information below represents an overview of health effects caused by overexposure to one or more components in sand & gravel.
Primary routes(s) of exposure: <input checked="" type="checkbox"/> Inhalation <input type="checkbox"/> Skin <input checked="" type="checkbox"/> Ingestion
<b>EYE CONTACT:</b> Direct contact with dust may cause irritation by mechanical abrasion or corrosive action. Conjunctivitis may occur.
<b>SKIN CONTACT:</b> Direct contact may cause irritation by mechanical abrasion. Some components of material are also known to cause corrosive effects to skin and mucous membranes.
<b>SKIN ABSORPTION:</b> Not expected to be a significant route of exposure.
<b>INGESTION:</b> Small amounts (a tablespoonful) swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts may cause gastrointestinal irritation and blockage.
<b>INHALATION:</b> Dust may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits.

**SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.****MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions. Smoking and obstructive/restrictive lung diseases may also exacerbate the effects of excessive exposure to this product.

This product is a mixture of components. The composition percentages are listed in Section III. Toxicological information for each component is listed below:

**Silicon Dioxide:** It is comprised of amorphous and crystalline forms of silica. In some batches, crystalline silica may represent up to 100% of silicon dioxide.

Exposure route: Eyes, respiratory system.

Target organs: Eyes, skin, respiratory system.

ACGIH, MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate exposure limits. Lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions as described under medical conditions aggravated by exposure.

**A. SILICOSIS**

The major concern is silicosis (lung disease), caused by the inhalation and retention of respirable crystalline silica dust. Silicosis leads to conditions such as lung fibrosis and reduced pulmonary function. The form and severity in which silicosis manifests itself, depends in part on the type and extent of exposure to silica dusts: chronic, accelerated and acute forms are recognized. In later stages the critical condition may become disabling and potentially fatal. Restrictive and/or obstructive changes in lung function may occur due to exposure. A risk associated with silicosis is development of pulmonary tuberculosis (silico-tuberculosis). Respiratory insufficiencies due to massive fibrosis and reduced pulmonary function, possibly with accompanying heart failure, are other potential causes of death due to silicosis.

Chronic or Ordinary Silicosis is the most common form of silicosis and can occur after many years of exposure to levels above the OELs for airborne respirable crystalline silica dust. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. Symptoms of silicosis may include (but are not limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; heart enlargement and/or failure. It is further defined as either simple or complicated silicosis.

Simple Silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF).

Complicated Silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease (cor pulmonale) secondary to the lung disease.

Accelerated Silicosis can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of the initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that the lung lesions appear earlier and the progression is more rapid.

Acute Silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is a rapidly progressive, incurable lung disease and is typically fatal.

## SECTION XI - TOXICOLOGICAL INFORMATION, CONTD.

**B. CANCER**

IARC - The International Agency for Research on Cancer ("IARC") concluded that there is "sufficient evidence in humans for the carcinogenicity of crystalline silica in the form of quartz or cristobalite", there is "sufficient evidence in experimental animals for the carcinogenicity of quartz dust" and that there is "limited evidence in experimental animals for the carcinogenicity of tridymite dust and cristobalite dust." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite dust is carcinogenic to humans (Group 1)." The IARC evaluation noted that not all industrial circumstances studied evidenced carcinogenicity. The monograph also stated that "Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C, "Silica Dust, Crystalline, in the Form of Quartz or Cristobalite" (2012).

NTP - In its Eleventh Annual Report on Carcinogens, concluded that respirable crystalline silica is known to be a human carcinogen, based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to respirable crystalline silica and increased lung cancer rates in workers exposed to crystalline silica dust.

OSHA - Crystalline silica is not on the OSHA carcinogen list.

CALIFORNIA PROPOSITION 65 - Crystalline silica in October 1996 was listed on the Safe Drinking Water and Toxic Enforcement ACT of 1986 as a chemical known to the state to cause cancer or reproductive toxicity.

There have been many articles published on the carcinogenicity of crystalline silica, which the reader should consult for additional information; the following are examples of recently published articles: (1) "Dose-Response Meta-Analysis of Silica and Lung Cancer", *Cancer Causes Control*, (20):925-33 (2009); (2) "Occupational Silica Exposure and Lung Cancer Risk: A Review of Epidemiological Studies 1996-2005", *Ann Oncol*, (17) 1039-50 (2006); (3) "Lung Cancer Among Industrial Sand Workers Exposed to Crystalline Silica", *Am J Epidemiol*, (153) 695-703 (2001); (4) "Crystalline Silica and The Risk of Lung Cancer in The Potteries", *Occup Environ Med*, (55) 779-785 (1998); (5) "Is Silicosis Required for Silica-Associated Lung Cancer?", *American Journal of Industrial Medicine*, (37) 252-259 (2000); (6) "Silica, Silicosis, and Lung Cancer: A Risk Assessment", *American Journal of Industrial Medicine*, (38) 8-18 (2000); (7) "Silica, Silicosis, and Lung Cancer: A Response to a Recent Working Group Report", *Journal of Occupational and Environmental Medicine*, (42) 704-720 (2000).

**C. AUTOIMMUNE DISEASES**

There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders, -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys. For a review of the subject, the following may be consulted: (1) "Antinuclear Antibody and Rheumatoid Factor in Silica-Exposed Workers", *Arh Hig Rada Toksikol*, (60) 185-90 (2009); (2) "Occupational Exposure to Crystalline Silica and Autoimmune Disease", *Environmental Health Perspectives*, (107) Supplement 5, 793-802 (1999); (3) "Occupational Scleroderma", *Current Opinion in Rheumatology*, (11) 490-494 (1999); (4) "Connective Tissue Disease and Silicosis", *Am J Ind Med*, (35), 375-381 (1999).

**D. TUBERCULOSIS**

Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to persons with tuberculosis. The following may be consulted for further information: (1) "Tuberculosis and Silicosis: Epidemiology, Diagnosis and Chemoprophylaxis", *J Bras Pneumol*, (34) 959-66 (2008); (2) *Occupational Lung Disorders*, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994); (3) "Risk of Pulmonary Tuberculosis Relative to Silicosis and Exposure to Silica Dust in South African Gold Miners", *Occup Environ Med*, (55) 496-502 (1998); (4) "Occupational Risk Factors for Developing Tuberculosis", *Am J Ind Med*, (30) 148-154 (1996).

**E. KIDNEY DISEASE**

There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis is associated with the increased incidence of kidney diseases, including end stage renal disease. For additional information on the subject, the following may be consulted: (1) "Mortality from Lung and Kidney Disease in a Cohort of North American Industrial Sand Workers: An Update", *Ann Occup Hyg*, (49) 367-73 (2005); (2) "Kidney Disease and Silicosis", *Nephron*, (85) 14-19 (2000); (3) "End Stage Renal Disease Among Ceramic Workers Exposed to Silica", *Occup Environ Med*, (56) 559-561 (1999); (4) "Kidney Disease and Arthritis in a Cohort Study of Workers Exposed to Silica", *Epidemiology*, (12) 405-412 (2001).

**SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.****F. NON-MALIGNANT RESPIRATORY DISEASES**

NIOSH has cited the results of studies that report an association between dusts found in various mining operations and non-malignant respiratory disease, particularly among smokers, including bronchitis, emphysema, and small airways disease. *NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica*, published in April 2002, available from NIOSH, 4676 Columbia Parkway, Cincinnati, OH 45226, or at <http://www.cdc.gov/niosh/02-129A.html>.

Respirable dust containing newly broken particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken pieces of silica.

**Aluminum Oxide:**

Exposure route: Inhalation, ingestion, eye/skin contact.

Target organs: Respiratory system, gastrointestinal system, eyes, skin.

Acute effect: Inhalation or ingestion of high concentrations of this substance may cause gastrointestinal and/or upper respiratory tract irritation. Eye and skin irritant.

Chronic effect/carcinogenicity: Aluminum oxide is not classifiable as a human carcinogen. On occasion workers chronically exposed to aluminum-containing dusts or fumes have developed severe pulmonary reactions including fibrosis, emphysema and pneumothorax. Long-term exposure may have effects on the central nervous system.

**Sodium Oxide:**

Exposure route: Inhalation, ingestion, eye/skin contact.

Target organs: Respiratory system, gastrointestinal system, eyes, skin.

Acute effect: Corrosive – Sodium oxide reacts violently with water to form sodium hydroxide. Causes burns of skin, eyes, respiratory and gastrointestinal tracts, extremely destructive to mucous membranes.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

**Iron Oxide: (Ferrous and Ferric Oxides)**

Exposure route: Inhalation, ingestion, skin

Target organs: Respiratory system, skin, eyes, neurological system

Acute effect: Major findings: stupor, shock, acidosis, hematemesis, bloody diarrhea or coma. Minor findings: vomiting, diarrhea, mild lethargy. Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis. Experimental work in animals exposed by intratracheal injection or by inhalation to iron oxide mixed with less than 5% silica has shown no evidence of fibrosis produced in lung tissue.

Chronic effect/carcinogenicity: Irritability, nausea or vomiting, and normocytic anemia. When exposed to levels greater than 50 to 100 milligram per day, it can result in pathological deposition of iron in the body tissues causing fibrosis of the pancreas, diabetes mellitus, and liver cirrhosis. Workers exposed to iron oxide fume and silica may develop a "mixed dust pneumoconiosis." Not classifiable as human carcinogen.

**Potassium Oxide:**

Exposure route: Inhalation, ingestion, eye/skin contact.

Target organs: Respiratory system, gastrointestinal system, eyes, skin.

Acute effect: Corrosive – Potassium oxide reacts violently with water to produce potassium hydroxide. If inhaled, causes sore throat, cough, burning sensation and shortness of breath. Contact with skin produces pain and blisters. Severe deep burns, redness and pain occur with eye contact. Ingestion results in burning sensations, abdominal pain, shock or collapse.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

**SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.**

**Calcium Oxide:**

Exposure route: Inhalation, ingestion, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: Direct contact with tissues, can result in burns and severe irritation because of its high reactivity and alkalinity. Major complaints of workers exposed to lime consist of irritation of the skin and eyes, although inflammation of the respiratory passages, ulceration and perforation of the nasal septum, and even pneumonia has been attributed to inhalation of the dust.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

**Magnesium Oxide:**

Exposure route: Inhalation, eye/skin contact.

Target organs: Eyes, respiratory system.

Acute effect: Magnesium oxide dust caused slight irritation of the eyes and nose, conjunctivitis, inflammation of the mucous membrane, and coughing up discolored sputum after industrial exposures amongst workers exposed to an unspecified concentration of MgO.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

**Calcium Carbonate:**

Exposure route: Inhalation, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: Irritation of the eyes, skin and respiratory system and cough. It has been reported that there may be a silicosis risk when using impure sand & gravel containing in excess of 3% quartz. However, it is claimed that pure calcium carbonate does not cause pneumoconiosis. Adverse health effects have generally not been reported in literature among workers using CaCO<sub>3</sub>.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen

Acute Toxicity Estimates for Sand & Gravel – Not Available

**SECTION XII – ECOLOGICAL INFORMATION**

No data available for this product.

**SECTION XIII – DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL METHOD**

Collect and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

The above information applies to Martin Marietta Materials product only as sold. The product may be contaminated during use and it is the responsibility of the user to assess the appropriate disposal method in that situation.

**SECTION XIV – TRANSPORT INFORMATION****DOT HAZARD CLASSIFICATION**

None

**PLACARD REQUIRED**

None

**LABEL REQUIRED**

Label as required by the OSHA Hazard Communication standard {29 CFR 1910.1200(f)}, and applicable state and local regulations.

**SECTION XV – REGULATORY INFORMATION**

**OSHA:** Crystalline Silica is not listed as a carcinogen.

**SARA Title III:** Section 311 and 312: Immediate health hazard and delayed health hazard.

**TSCA:** All components of the product appear on the EPA TSCA chemical substance inventory.

**RCRA:** Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

**CERCLA:** Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 40 CFR §302.4

**EPCRA (Emergency Planning and Community Right to Know Act):** Crystalline silica (quartz) is not an extremely hazardous substance under regulations of the Emergency Planning and Community Right to Know Act, 40 CFR Part 355, Appendices A and B and is not a toxic chemical subject to the requirements of Section 313.

**Clean Air Act:** Crystalline silica (quartz) mined and processed by Martin Materials was not processed with or does not contain any Class I or Class II ozone depleting substances.

**FDA:** Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3). (The FDA standard primarily applies to products containing silica used in the coatings of food contact surfaces).

**California Proposition 65:** Respirable crystalline silica (quartz) is classified as a substance known to the state of California to be a carcinogen.

**Massachusetts Toxic Use Reduction Act:** Respirable crystalline silica is considered toxic per the Massachusetts Toxic Use Reduction Act when used in abrasive blasting and molding.

**Pennsylvania Worker and Community Right to Know Act:** Quartz is considered hazardous for purposes of the Act, but it is not a special hazardous substance or an environmental hazardous substance.

**SECTION XVI – OTHER INFORMATION****DEFINITIONS OF ACRONYMS/ABBREVIATIONS**

ACGIH: American Conference of Governmental Industrial Hygienists

ANSI: American National Standards Institute

APF: Assigned Protection Factor

California REL: California Inhalation Reference Exposure Limit

CAS: Chemical Abstracts Service

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act

CFR: US Code of Federal Regulations

DHHS: Department of Health and Human Services

EPA: Environmental Protection Agency

EPCRA: Emergency Planning and Community Right to Know Act

FDA: Food and Drug Administration

GHS: Globally Harmonized System

HEPA: High-Efficiency Particulate Air

IARC: International Agency for Research on Cancer

IDLH: Immediately Dangerous to Life and Health

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health, US Department of Health and Human Services

NIOSH REL: NIOSH Recommended Exposure Limit

NTP: National Toxicology Program

OEL: Occupational Exposure Limit

OSHA: Occupational Safety and Health Administration, US Department of Labor

**SECTION XVI – OTHER INFORMATION, CONTD.**

**DEFINITIONS OF ACRONYMS/ABBREVIATIONS, CONTD.**

PEL: Permissible Exposure Limit

PMF: Progressive Massive Fibrosis

RCRA: Resource Conservation and Recovery Act

SARA Title III: Title III of the Superfund Amendments and Reauthorization Act, 1986

SDS: Safety Data Sheet

STOT: Specific Target Organ Toxicity

TLV: Threshold Limit Value

TSCA: Toxic Substance Control Act

TWA: Time-Weighted Average

User's Responsibility: The OSHA Hazard Communication Standard 29 CFR 1910.1200 requires that this SDS be made available to your employees who handle or may be exposed to this product. Educate and train your employees regarding applicable precautions. Instruct your employees to handle this product properly.

Disclaimer: The information contained in this document applies to this specific material as supplied and Martin Marietta Materials believes that the information contained in this SDS is accurate. The suggested precautions and recommendations are based on recognized good work practices and experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance as not all use circumstances can be anticipated. It may not be valid for this material if it is used in combination with other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for one's own particular use. Since the actual use of the product described herein is beyond our control, Martin Marietta Materials, assumes no liability arising out of the use of the product by others. Appropriate warnings and safe handling procedures should be provided to handlers and users. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulation, rules or insurance requirement. However, product must not be used in a manner which could result in harm.

An electronic version of this SDS is available at [www.martinmarietta.com](http://www.martinmarietta.com). More information on the effects of crystalline silica exposure may be obtained from OSHA (phone number: 1-800-321-OSHA; website: <http://www.osha.gov>) or from NIOSH (phone number: 1-800-35-NIOSH; website: <http://www.cdc.gov/niosh>).

DATE OF PREPARATION 3/2015 (Combines Martin Marietta Materials MSDS for Sand & Gravel and TXI MSDS for Gravel)  
REPLACES 11/2007 (MMM MSDS) and 02/2014 (TXI MSDS)

NO WARRANTY, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE IS MADE

**ATTACHMENT 02 - I**

**EMISSION UNIT TABLE**

## Attachment I

### Emission Units Table

(includes all emission units and air pollution control devices  
that will be part of this permit application review, regardless of permitting status)

Emission Unit ID <sup>1</sup>	Emission Point ID <sup>2</sup>	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type <sup>3</sup> and Date of Change	Control Device <sup>4</sup>
BC-1	TP7	Aggregate Conveyor Belt	2012	200 TPH		PE
BC-2	TP9	Aggregate Conveyor Belt	2012	200 TPH		PE
BC-3	TP12	Aggregate Conveyor Belt	2012	165 TPH		PE
BC-4	TP20	Mud Conveyor Belt	2012	80 TPH		None
BC-5	TP21	Mud Conveyor Belt	2012	80 TPH		None
BC-6	TP22	Mud Conveyor Belt	2012	80 TPH		None
BC-7	TP23	Mud Conveyor Belt	2012	90 TPH		None
BC-8	TP27	Aggregate Conveyor Belt	2012	145 TPH		PE
BC-9	TP33	Mud Conveyor Belt	2012	80 TPH		None
BC-10	TP34	Mud Conveyor Belt	2012	80 TPH		None
SC-1	TP15	Screw Conveyor	2012	3.5 TPH		APCD-1
SC-2	TP29	Screw Conveyor	2012	1.75 TPH		APCD-1
<b>CRS-1</b>	<b>TP8</b>	<b>Crusher</b>	<b>2012</b>	<b>100 TPH</b>	<b>Never Installed</b>	<b>FE</b>
AB-1	TP6	Aggregate bin	2012	165 TPH		PE
AB-2	TP5	Aggregate bin	2012	170 TPH		PE
AB-3	TP10	Aggregate bin	2012	200 TPH		PE
AB-4	TP25	Aggregate bin	2012	145 TPH		PE
AH-1	TP13	Aggregate holding hopper	2012	80 TPH		PE
WH-1	TP11	Aggregate weight bin	2012	165 TPH		PE
WH-2	TP16	Cement weight bin	2012	10 TPH		APCD-1
WH-3	TP26	Aggregate weight bin	2012	145 TPH		PE
WH-4	TP30	Cement weight bin	2012	2 TPH		APCD-1
CS-1	TP14 TP28	Cement Silo	2012	14 TPH		APCD-1
CM-1	TP17,18, 19	Mixer Sicoma 2250	2012	80 TPH		FE
CM-2	TP31 TP32	Mixer Sicoma 565	2012	20 TPH		FE
SG-1	E2	Steam Generator NDG 750 Curetec	2012	2.5mm/btu/hr		FE

Emission Unit ID	Emission Point ID	Emission Unit Description	Year/Installed Modified	Design Capacity	Type/Date of Change	Control Device
BLC	N/A	Block Cuber	2012	1,700 ph		None
BLM	N/A	Block Machine	2012	1,700 ph		None
BLS	N/A	Block Stacker & Unstacker	2012	1,700 ph		None
T-1	E-3	On-road Diesel	2012	2,000 gal.	Removed 07.2014	None
T-2	E-4	Off-road Diesel	2012	1,000 gal.		None
T-3	E-5	On-road Diesel	2014	1,000 gal.	Installed 07.2014	None

<sup>1</sup> For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.  
<sup>2</sup> For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.  
<sup>3</sup> New, modification, removal  
<sup>4</sup> For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

**ATTACHMENT 02 - J**

**EMISSION POINTS DATA SUMMARY SHEETS**

**Combined Tables**

**Table 1 – Emission Points Data Summary Sheet**

**Table 2 – Release Parameter Data**

**Attachment J  
EMISSION POINTS DATA SUMMARY SHEET**

Table 1: Emissions Data															
Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type <sup>1</sup>	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS <sup>3</sup> (Specify VOCs & HAPS)	Maximum Potential Uncontrolled Emissions <sup>4</sup>		Maximum Potential Controlled Emissions <sup>5</sup>		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used <sup>6</sup>	Emission Concentration (ppmv or mg/m <sup>3</sup> )
		ID No.	Source	ID No.	Device Type	Short Term <sup>2</sup>	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
TP-1	Fugitive	CS1	Cement Silo Loading	APCD1	Baghouse	N/A	N/A	PM PM10 Arsenic Beryllium Cadmium Chromium Lead Manganese Nickel Phosphorus	1.521 0.979 2.35E-05 2.51E-07 3.28E-06 3.58E-08 1.03E-05 4.51E-05 2.83E-03 2.46E-04 1.65E-04	6.661 4.289 1.03E-04 1.10E-08 1.43E-05 1.55E-05 4.51E-05 1.24E-02 1.08E-03 7.24E-04	0.002 0.001 2.35E-08 2.51E-10 3.28E-09 3.53E-09 1.03E-08 4.51E-08 2.83E-06 2.46E-07 1.65E-07	0.007 0.004 1.03E-07 1.10E-09 1.43E-08 1.55E-08 4.51E-08 1.24E-05 1.08E-06 7.24E-07	Solid	EE	N/A
TP-2	Fugitive	E3-1-5	Stockpile Loading	WS	Water Spray	N/A	N/A	PM PM10	0.081 0.039	0.353 0.169	0.020 0.010	0.088 0.042	Solid	EE	N/A
TP-3	Fugitive	FE	Front End Loader	No	None	N/A	N/A	PM PM10	0.029 0.014	0.126 0.060	0.029 0.014	0.126 0.060	Solid	EE	N/A
TP-4	Fugitive	FE	Front End Loader	No	None	N/A	N/A	PM PM10	0.029 0.014	0.126 0.060	0.029 0.014	0.126 0.060	Solid	EE	N/A
TP-5	Fugitive	AB2	Aggregate Bin	PE	Partial Enclosure	N/A	N/A	PM PM10	1.173 0.561	5.138 2.457	0.587 0.281	2.569 1.229	Solid	EE	N/A
TP-6	Fugitive	AB1	Aggregate Bin	PE	Partial Enclosure	N/A	N/A	PM PM10	1.139 0.545	4.987 2.385	0.569 0.272	2.493 1.192	Solid	EE	N/A
TP-7	Fugitive	BC1	Conveyor	FE	Partial Enclosure	N/A	N/A	PM PM10	1.380 0.660	6.044 2.891	0.276 0.132	1.209 0.578	Solid	EE	N/A
TP-8	Fugitive	CRS 4	Crusher	FE	Full Enclosure	N/A	N/A	PM PM10	0.690 0.330	3.022 1.445	0.138 0.066	0.604 0.289	Solid	EE	N/A - Never Installed
TP-9	Fugitive	BC2	Conveyor	PE	Partial Enclosure	N/A	N/A	PM PM10	1.380 0.660	6.004 2.891	0.690 0.330	3.022 1.445	Solid	EE	N/A
TP-10	Fugitive	AB3	Aggregate Bin	PE	Partial Enclosure	N/A	N/A	PM PM10	0.960 0.560	4.205 2.453	0.480 0.280	2.102 1.226	Solid	EE	N/A
TP-11	Fugitive	WH1	Aggregate Weight Bin	PE	Partial Enclosure	N/A	N/A	PM PM10	1.139 0.545	4.987 2.385	0.569 0.272	2.493 1.192	Solid	EE	N/A
TP-12	Fugitive	BC3	Conveyor	PE	Partial Enclosure	N/A	N/A	PM PM10	1.139 0.545	4.987 2.385	0.569 0.272	2.493 1.192	Solid	EE	N/A
TP-13	Fugitive	AH1	Aggregate Holding Hopper	PE	Partial Enclosure	N/A	N/A	PM PM10	0.552 0.264	2.418 1.156	0.276 0.132	1.209 0.578	Solid	EE	N/A

TP-14	Fugitive	CS1	Cement Silo	APC D1	Baghouse	N/A	N/A	PM	PM10	2.555 1.645	11.191 7.205	0.003 0.002	0.011 0.007	Solid	EE	N/A
TP-15	Fugitive	SC1	Screw Conveyor	APC D1	Baghouse	N/A	N/A	PM	PM10	0.017 0.010	0.074 0.043	0.00002 0.00001	0.00007 0.00004	Solid	EE	N/A
TP-16	Fugitive	WH2	Cement Weight Bin	FE	Baghouse	N/A	N/A	PM	PM10	5.720 1.560 6.70E-04 9.44E-07 1.14E-04 3.08E-05 4.90E-03 2.82E-04 1.62E-03	25.054 6.833 7.94E-03 4.13E-06 4.88E-04 1.34E-04 2.14E-02 1.15E-03 7.08E-03	1.144 0.312 1.367 5.87E-04 8.27E-07 9.95E-05 2.68E-05 4.29E-03 2.30E-04 1.42E-03	5.011 1.367 5.87E-04 8.27E-07 9.95E-05 2.68E-05 4.29E-03 2.30E-04 1.42E-03	Solid	EE	N/A
TP-17	Fugitive	CM1	Central Mixer	NO	None	N/A	N/A	PM	PM10	0.552 0.264	2.418 1.156	0.552 0.264	2.418 1.156	Solid	EE	N/A
TP-18	Fugitive	CM1	Central Mixer	NO	None	N/A	N/A	PM	PM10	0.552 0.264	2.418 1.156	0.552 0.264	2.418 1.156	Solid	EE	N/A
TP-19	Fugitive	CM1	Central Mixer	NO	None	N/A	N/A	PM	PM10	0.552 0.264	2.418 1.156	0.552 0.264	2.418 1.156	Solid	EE	N/A
TP-20	Fugitive	BC4	Mud Conveyor	No	None	N/A	N/A	PM	PM10	0.552 0.264	2.418 1.156	0.552 0.264	2.418 1.156	Solid	EE	N/A
TP-21	Fugitive	BC4	Mud Conveyor	No	None	N/A	N/A	PM	PM10	0.552 0.264	2.418 1.156	0.552 0.264	2.418 1.156	Solid	EE	N/A
TP-22	Fugitive	BC4	Mud Conveyor	No	None	N/A	N/A	PM	PM10	0.552 0.264	2.418 1.156	0.552 0.264	2.418 1.156	Solid	EE	N/A
TP-23	Fugitive	BC4	Mud Conveyor	No	None	N/A	N/A	PM	PM10	0.621 0.297	2.720 1.301	0.621 0.297	2.720 1.301	Solid	EE	N/A
TP-24	Fugitive	FE	Front End Loader	No	None	N/A	N/A	PM	PM10	0.029 0.014	0.126 0.060	0.029 0.014	0.126 0.060	Solid	EE	N/A
TP-25	Fugitive	AB4	Aggregate Bin	PE	Partial Enclosure	N/A	N/A	PM	PM10	0.696 0.406	3.048 1.778	0.348 0.203	1.524 0.889	Solid	EE	N/A
TP-26	Fugitive	WH3	Aggregate Weight Bin	PE	Partial Enclosure	N/A	N/A	PM	PM10	1.001 0.479	4.382 2.096	0.500 0.239	2.191 1.048	Solid	EE	N/A
TP-27	Fugitive	BC8	Conveyor	FE	Full Enclosure	N/A	N/A	PM	PM10	1.001 0.479	4.382 2.096	0.500 0.239	2.191 1.048	Solid	EE	N/A
TP-28	Fugitive	CS1	Cement Silo	APC D1	Baghouse	N/A	N/A	PM	PM10	1.278 0.823	5.595 3.603	0.001 0.001	0.006 0.004	Solid	EE	N/A
TP-29	Fugitive	SC2	Screw Conveyor	APC D1	Baghouse	N/A	N/A	PM	PM10	0.008 0.005	0.037 0.021	0.00001 0.000005	0.00004 0.000021	Solid	EE	N/A
TP-30	Fugitive	WH4	Cement Weight Bin	APC D1	Baghouse	N/A	N/A	PM	PM10	1.144 0.312 1.68E-04 2.36E-07 2.84E-05 7.64E-06 1.22E-03 6.56E-05 4.04E-04	5.011 1.367 7.34E-04 1.03E-06 1.24E-04 3.35E-05 5.36E-03 2.87E-04 1.77E-03	0.229 0.062 3.35E-05 4.72E-08 5.68E-06 1.53E-06 2.45E-04 1.31E-05 8.08E-05	1.002 0.273 1.47E-04 2.07E-07 2.48E-05 6.69E-08 1.07E-03 5.75E-05 3.54E-04	Solid	EE	N/A
TP-31	Fugitive	CM2	Central Mixer	No	None	N/A	N/A	PM	PM10	0.138 0.066	0.604 0.289	0.138 0.066	0.604 0.289	Solid	EE	N/A

TP-32	Fugitive	CM2	Central Mixer	No	None	N/A	N/A	PM PM10	0.138 0.066	0.604 0.289	0.138 0.066	0.604 0.289	Solid	EE	
TP-33	Fugitive	BC9	Mud Conveyor	No	None	N/A	N/A	PM PM10	0.552 0.264	2.418 1.156	0.552 0.264	2.418 1.156	Solid	EE	
TP-34	Fugitive	BC9	Mud Conveyor	No	None	N/A	N/A	PM PM10	0.552 0.264	2.418 1.156	0.552 0.264	2.418 1.156	Solid	EE	
TP-35	Fugitive	E3-6 thru 11	Stockpile Loading E3-6 thru E3-11	WS	Water Spray	N/A	N/A	PM PM10	0.276 0.132	1.208 0.578	0.069 0.033	0.302 0.144	Solid	EE	Added 2015
TP-36	Fugitive	FE	Front End Loader to Wholesale Loadout	WS	Water Spray	N/A	N/A	PM PM10	0.276 0.132	1.208 0.578	0.069 0.033	0.302 0.144	Solid	EE	Added 2015

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

- 1 Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
- 2 Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).
- 3 List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. DO NOT LIST H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.
- 4 Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- 5 Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- 6 Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).
- 7 Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m<sup>3</sup>) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO<sub>2</sub>, use units of ppmv (See 45CSR10).

**Attachment J  
EMISSION POINTS DATA SUMMARY SHEET**

**Table 2: Release Parameter Data**

Emission Point ID No. (Must match Emission Units Table)	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow <sup>1</sup> (acfm) at operating conditions	Velocity (fps)	Ground Level (Height above mean sea level)	Stack Height <sup>2</sup> (Release height of emissions above ground level)	Northing <sup>3</sup>	Eastings <sup>3</sup>
TP-1	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-2	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-3	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-4	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-5	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-6	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP7	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-8	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-9	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-10	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-11	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-12	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-13	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-14	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-15	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478
TP-16	N/A	Ambient	N/A	N/A	591	N/A	42 66 528	04 23 478

TP-17	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-18	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-19	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-20	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-21	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-22	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-23	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-24	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-25	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-26	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-27	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-28	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-29	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-30	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-31	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-32	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-33	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-34	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-35 <sup>4</sup>	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478
TP-36 <sup>4</sup>	N/A	Ambient	N/A	N/A	N/A	591	N/A	N/A	42 66 528	04 23 478

<sup>1</sup> Give at operating conditions. Include inerts.  
<sup>2</sup> Release height of emissions above ground level.  
<sup>3</sup> The coordinates associated with TP-1 thru TP-34 have been corrected.  
<sup>4</sup> Added in 2015

**ATTACHMENT 02 - K**

**EMISSIONS DATA SUMMARY SHEET(S)**

## Attachment K

### FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS	
1.) Will there be haul road activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."	

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS <sup>1</sup>	Maximum Potential Uncontrolled Emissions <sup>2</sup>		Maximum Potential Controlled Emissions <sup>3</sup>		Est. Method Used <sup>4</sup>
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads	PM PM10	0.01859 0.00372	0.00010 0.00056	0.00056 0.00112	0.00010 0.00056	EE
Unpaved Haul Roads	PM PM10	18.28 5.39	79.97 23.60	5.48 1.62	23.99 7.08	EE
Storage Pile Emissions	PM PM10	24.889 11.698	109.012 51.236	6.222 2.924	27.253 12.809	EE
Wastewater Treatment Evaporation & Operations	N/A					
Equipment Leaks	N/A					
General Clean-up VOC Emissions	N/A					
Other	N/A					

<sup>1</sup> List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. DO NOT LIST H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.

<sup>2</sup> Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

<sup>3</sup> Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

<sup>4</sup> Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

**ATTACHMENT 02 - L**

**EMISSION UNIT DATA SHEET(S)**

**Fugitive Emissions from Unpaved Haulroads**

**Fugitive Emissions from Paved Haulroads**

**Storage Tank (T-3) (E-5) – 1,000 Gal.**

**Emissions From UNPAVED HAULROADS**

(See Note 5)

**UNPAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)**

Source AP42, Fifth Edition, 13.2.2 Unpaved Roads, Revised 11/2006

Emission Estimate For Unpaved Haulroads at Industrial Sites (equation 1)

$E = k \cdot ((s/12)^a)^b \cdot (W/3)^b$  = lb/vmt

Where:

	PM	PM-10
k = particle size multiplier	4.90	1.50
a = empirical constant	0.7	0.9
b = empirical constant	0.45	0.45

s = silt content of road surface material (%)	10
---	----

**For lb/hr** (lb/vmt)\*(miles per trip)\*(Max trips per hour)  
**For Ton/yr** (lb/vmt)\*(miles per trip)\*(Max trips per year)\*(1/2000)

Item Number	Description	Number of wheels	Mean Vehicle Weight(tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips Per Hour	Maximum Trips Per Year	Control Device ID Number	Control Efficiency %
1	Cement Delivery	18	15	3	0.151	0.083	730	WS	70
2	Aggregate Delivery (Cement Plant)	14	13	3	0.208	0.583	5,110	WS	70
3	Front End Loader Activity (Cement Plant)	4	8	3	0.113	4.167	36,500	WS	70
4	Fork Truck Activity (Cement Plant)	4	4	3	0.227	5.417	47,450	WS	70
5	Load Out (Cement Plant)	14	13.5	3	0.284	0.625	5,475	WS	70
6	Wholesale Aggregate Delivery	18	26.7	3	0.07	0.830	7,275	WS	70
6	Wholesale Aggregate Delivery	10	25.8	3	0.07	0.242	2,121	WS	70
7	Wholesale Aggregate Load Out	18	26.7	3	0.07	0.092	808	WS	70
7	Wholesale Aggregate Load Out	10	25.8	3	0.07	2.058	18,030	WS	70
7	Wholesale Aggregate Load Out	4	4.6	3	0.07	1.998	17,500	WS	70
8	Wholesale Front End Loader Activity	4	8	3	0.035	13.318	116,667	WS	70

Item No.	PM		PM-10	
	Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled TPY	Controlled TPY
1	0.11	0.03	0.15	0.01

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2	1.01	4.43	0.30	1.33	0.30	1.31	0.09	0.39
3	3.16	13.83	0.95	4.15	0.93	4.08	0.28	1.22
4	6.04	26.44	1.81	7.93	1.78	7.80	0.53	2.34
5	1.51	6.60	0.45	1.98	0.44	1.95	0.13	0.58
6	0.67	2.94	0.20	0.88	0.20	0.87	0.06	0.26
6	0.19	0.84	0.06	0.25	0.06	0.25	0.02	0.07
7	0.07	0.33	0.02	0.10	0.02	0.10	0.01	0.03
7	1.64	7.17	0.49	2.15	0.48	2.12	0.14	0.63
7	0.73	3.20	0.22	0.96	0.22	0.95	0.06	0.28
8	3.13	13.71	0.94	4.11	0.92	4.05	0.28	1.21
<b>TOTALS</b>	<b>18.26</b>	<b>79.97</b>	<b>5.48</b>	<b>23.99</b>	<b>5.39</b>	<b>23.60</b>	<b>1.62</b>	<b>7.08</b>

1. Control Efficiency based on Water Truck with Water Spray.
2. All calculations are based on 8,760 hours per year.
3. Client provided Maximum Trips Per Day. Maximum Trips Per Year were calculated by multiplying Trips Per Day by 365. Maximum Trips per Hour were calculated by dividing Maximum Trips Per Year by 8,760.
4. Loadout calculations assume worst case scenario of all product delivered, being sold and loaded out.
5. Since the contents of the UPHR tab and the PVHR tab in the Excel emissions spreadsheets used by ERCC contains the same information requested in the DAQ form titled Haul Roads EUDS, the UPHR and PVH tabs have been used in Attachment L.



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 Redhouse, WV Facility  
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7	0.0094	0.000046	0.0003	0.0000046	0.0019	0.000025	0.0006	0.000025
7	0.2034	0.001028	0.0061	0.0001028	0.0407	0.012447	0.0122	0.012447
7	0.0340	0.000998	0.0010	0.0000998	0.0068	0.011725	0.0020	0.011725
<b>TOTALS</b>	<b>0.01859</b>	<b>0.00010</b>	<b>0.00056</b>	<b>0.00001</b>	<b>0.00372</b>	<b>0.00056</b>	<b>0.00112</b>	<b>0.00056</b>

NOTE: Since the contents of the UPHR tab and the PVHR tab in the Excel emissions spreadsheets used by ERCC contains the same information requested in the DAQ form titled Haul Roads EUDS, the UPHR and PVH tabs have been used in Attachment L.

## Attachment L EMISSIONS UNIT DATA SHEET STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT [www.epa.gov/tnn/tanks.html](http://www.epa.gov/tnn/tanks.html)), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (<http://www.epa.gov/tnn/chief/>)

### I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name N/A	2. Tank Name Off-road Diesel
3. Tank Equipment Identification No. (as assigned on <i>Equipment List Form</i> ) T-3	4. Emission Point Identification No. (as assigned on <i>Equipment List Form</i> ) E-5
5. Date of Commencement of Construction (for existing tanks)	
6. Type of change <input type="checkbox"/> New Construction <input type="checkbox"/> New Stored Material <input checked="" type="checkbox"/> Other Tank Modification	
7. Description of Tank Modification (if applicable) On July 29, 2014 the existing 2,000 gal. diesel fuel tank (T-1; E-2) was replaced with this new 1,000 gallon tank.	
7A. Does the tank have more than one mode of operation? (e.g. is there more than one product stored in the tank?) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). N/A	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): N/A	

### II. TANK INFORMATION (required)

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height. 1,000 gallons	
9A. Tank Internal Diameter (ft) 4	9B. Tank Internal Height (or Length) (ft) 12
10A. Maximum Liquid Height (ft) Unknown	10B. Average Liquid Height (ft) Unknown
11A. Maximum Vapor Space Height (ft) Unknown	11B. Average Vapor Space Height (ft) Unknown
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights. 1,000 gallons	



25F. Describe deck fittings; indicate the number of each type of fitting:

ACCESS HATCH		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:

AUTOMATIC GAUGE FLOAT WELL		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:

COLUMN WELL		
BUILT-UP COLUMN - SLIDING COVER, GASKETED:	BUILT-UP COLUMN - SLIDING COVER, UNGASKETED:	PIPE COLUMN - FLEXIBLE FABRIC SLEEVE SEAL:

LADDER WELL	
PIP COLUMN - SLIDING COVER, GASKETED:	PIPE COLUMN - SLIDING COVER, UNGASKETED:

GAUGE-HATCH/SAMPLE PORT	
SLIDING COVER, GASKETED:	SLIDING COVER, UNGASKETED:

ROOF LEG OR HANGER WELL		
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	SAMPLE WELL-SLIT FABRIC SEAL (10% OPEN AREA)

VACUUM BREAKER	
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:

RIM VENT	
WEIGHTED MECHANICAL ACTUATION GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:

DECK DRAIN (3-INCH DIAMETER)	
OPEN:	90% CLOSED:

STUB DRAIN	
1-INCH DIAMETER:	

OTHER (DESCRIBE, ATTACH ADDITIONAL PAGES IF NECESSARY)

26. Complete the following section for Internal Floating Roof Tanks		<input checked="" type="checkbox"/> Does Not Apply
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded		
26B. For Bolted decks, provide deck construction:		
26C. Deck seam:		
<input type="checkbox"/> Continuous sheet construction 5 feet wide <input type="checkbox"/> Continuous sheet construction 6 feet wide <input type="checkbox"/> Continuous sheet construction 7 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 7.5 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 12 feet wide <input type="checkbox"/> Other (describe)		
26D. Deck seam length (ft)	26E. Area of deck (ft <sup>2</sup> )	
For column supported tanks:	26G. Diameter of each column:	
26F. Number of columns:		

**IV. SITE INFORMATION** (optional if providing TANKS Summary Sheets)

27. Provide the city and state on which the data in this section are based. Charleston, West Virginia
28. Daily Average Ambient Temperature (°F)
29. Annual Average Maximum Temperature (°F)
30. Annual Average Minimum Temperature (°F)
31. Average Wind Speed (miles/hr)
32. Annual Average Solar Insulation Factor (BTU/(ft <sup>2</sup> -day))
33. Atmospheric Pressure (psia)

**V. LIQUID INFORMATION** (optional if providing TANKS Summary Sheets)

34. Average daily temperature range of bulk liquid: SEE TANKS REPORT			
34A. Minimum (°F)	34B. Maximum (°F)		
35. Average operating pressure range of tank:			
35A. Minimum (psig)	35B. Maximum (psig)		
36A. Minimum Liquid Surface Temperature (°F)	36B. Corresponding Vapor Pressure (psia)		
37A. Average Liquid Surface Temperature (°F)	37B. Corresponding Vapor Pressure (psia)		
38A. Maximum Liquid Surface Temperature (°F)	38B. Corresponding Vapor Pressure (psia)		
39. Provide the following for <u>each</u> liquid or gas to be stored in tank. Add additional pages if necessary.			
39A. Material Name or Composition	Off-road diesel		
39B. CAS Number	68476-30-2		
39C. Liquid Density (lb/gal)	6.76		
39D. Liquid Molecular Weight (lb/lb-mole)	4-5		
39E. Vapor Molecular Weight (lb/lb-mole)	180		





22. Type of Pollutant(s) to be collected (if particulate give specific type): Cement Dust				
23. Is there any SO <sub>3</sub> in the emission stream? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes SO <sub>3</sub> content: ppmv				
24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:				
Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM	6.52	0.76	6.52E-03	7.61E-04
PM-10	3.77	0.44	3.77E-03	4.40E-04
Arsenic	8.62E-04	1.01E-04	1.68E-04	1-96E.05
Beryllium	2.51E-07	2.92E-08	2.51E-10	2.92E-11
Cadmium	4.46E-06	5.20E-07	2.39E-07	2.79E-08
Chromium	1.46E-04	1.70E-05	2.84E-05	3031E-06
Lead	4.85E-05	5.66E-06	7.65E06	8.93E-07
Manganese	8.95E-03	1.044-03	1.23E-03	1.43E-04
Nickel	5.74E-04	6.70E-05	6.58E-05	7.68E-06
Phosphorous	2.19E-03	2.55E-04	4.04E-04	4.72E-05
25. Complete the table:				
Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector		Fraction Efficiency of Collector	
	Weight % for Size Range		Weight % for Size Range	
0 – 2	.5 microns or larger		99.9%	
2 – 4	NA		NA	
4 – 6	NA		NA	
6 – 8	NA		NA	
8 – 10	NA		NA	
10 – 12	NA		NA	
12 – 16	NA		NA	
16 – 20	NA		NA	
20 – 30	NA		NA	

30 – 40	NA	NA
40 – 50	NA	NA
50 – 60	NA	NA
60 – 70	NA	NA
70 – 80	NA	NA
80 – 90	NA	NA
90 – 100	NA	NA
>100	NA	NA

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency:
- Other, specify:

27. Describe any recording device and frequency of log entries:  
None, New Facility

28. Describe any filter seeding being performed: NONE

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification): NONE

30. Describe the collection material disposal system: Drop back into silo

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? YES

**32. Proposed Monitoring, Recordkeeping, Reporting, and Testing**

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

SEE ATTACHMENT O

RECORDKEEPING:

SEE ATTACHMENT O

REPORTING:

SEE ATTACHMENT O

TESTING:

SEE ATTACHMENT O

MONITORING:

Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING:

Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING:

Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING:

Please describe any proposed emissions testing for this process equipment on air pollution control device.

**33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.**

99.9% of all .5 micron and larger, when properly installed, maintained, and operated according to the Operating and Maintenance manual, per Staclean Manufacturer's Representative.

**34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.**

99.9% of all .5 micron and larger, when properly installed, maintained, and operated according to the Operating and Maintenance manual, per Staclean Manufacturer's Representative.

**35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.**

See details described in Operating and Maintenance manual, per Staclean Manufacturer's Representative.

**ATTACHMENT 02 - N**

**SUPPORTING EMISSION CALCULATIONS**

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Air Pollutants	BEFORE		AFTER		CHANGE	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
<b>Criteria Air Pollutants</b>						
Particulate Matter < 10um	8.09	35.43	9.98	43.70	1.89	8.27
Total Particulate Matter	18.76	82.16	23.35	102.29	4.59	20.13
Sulfur Dioxide	0.00	0.01	0.00	0.01	0.00	0.00
Nitrogen Oxides	0.26	1.16	0.26	1.16	0.00	0.00
Carbon Monoxide	0.22	0.97	0.22	0.97	0.00	0.00
Volatile Organic Compounds	0.02	0.07	0.01	0.06	-0.01	-0.01
<b>Total Criteria Air Pollutants<sup>1</sup></b>	<b>19.26</b>	<b>84.37</b>	<b>23.86</b>	<b>104.50</b>	<b>4.60</b>	<b>20.13</b>
<b>Greenhouse Gases</b>						
Carbon Dioxide	317.80	1391.96	317.80	1391.96	0.00	0.00
Methane	0.01	0.03	0.01	0.03	0.00	0.00
Nitrous Oxide	0.01	0.03	0.01	0.03	0.00	0.00
<b>Total Greenhouse Gases</b>	<b>317.81</b>	<b>1392.01</b>	<b>317.81</b>	<b>1392.01</b>	<b>0.00</b>	<b>0.00</b>
<b>Hazardous Air Pollutants</b>						
Arsenic	1.68E-04	7.37E-04	1.68E-04	7.37E-04	0.00	0.00
Benzene	5.56E-06	2.44E-05	5.56E-06	2.44E-05	0.00	0.00
Beryllium	3.20E-08	1.40E-07	3.20E-08	1.40E-07	0.00	0.00
Cadmium	3.15E-06	1.38E-05	3.15E-06	1.38E-05	0.00	0.00
Chromium	3.21E-05	1.41E-04	3.21E-05	1.41E-04	0.00	0.00
Cobalt	2.22E-07	9.74E-07	2.22E-07	9.74E-07	0.00	0.00
Dichlorobenzene	3.18E-06	1.39E-05	3.18E-06	1.39E-05	0.00	0.00
Formaldehyde	1.99E-04	8.70E-04	1.99E-04	8.70E-04	0.00	0.00
Hexane	4.77E-03	2.09E-02	4.77E-03	2.09E-02	0.00	0.00
Manganese	1.23E-03	5.38E-03	1.23E-03	5.38E-03	0.00	0.00
Mercury	6.89E-07	3.02E-06	6.89E-07	3.02E-06	0.00	0.00
Naphthalene	1.62E-06	7.08E-06	1.62E-06	7.08E-06	0.00	0.00
Nickel	7.14E-05	3.13E-04	7.14E-05	3.13E-04	0.00	0.00
POM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	0.00
Selenium	6.36E-08	2.78E-07	6.36E-08	2.78E-07	0.00	0.00
Toluene	9.00E-06	3.94E-05	9.00E-06	3.94E-05	0.00	0.00
Phosphorus	4.04E-04	1.77E-03	4.04E-04	1.77E-03	0.00	0.00
Lead	8.97E-06	3.93E-05	8.97E-06	3.93E-05	0.00	0.00
<b>Total HAPs</b>	<b>6.90E-03</b>	<b>3.02E-02</b>	<b>6.90E-03</b>	<b>3.02E-02</b>	<b>0.00E+00</b>	<b>0.00E+00</b>







**Emissions From TRANSFER POINTS**

Source: AP-42, Fifth Edition, 11.12- 2 Emission Factors for Concrete Batching, Revised 6/2006

Emission Factors (lb/ton)	PM	PM-10
Aggregate Transfer Emissions	0.0069	0.0033
Sand Transfer Emissions	0.0021	0.00099
Cement Unloading to Elevated Storage (Pneumatic)	0.7300	0.4700
Weigh Hopper Loading	0.0048	0.0028
Mixer Loading (Central Mixer)	0.5720	0.1560

For lb/hr  $[\text{lb/ton}] * [\text{ton/hr}] = [\text{lb/hr}]$   
 For Tons/year  $[\text{lb/ton}] * [\text{ton/yr}] * [\text{ton}/2000\text{lb}] = [\text{ton/yr}]$

Transfer Point ID No.	Transfer Point Description Include ID Numbers of all conveyors, crushers, screens, stockpiles, etc. involved	Transfer Rate		Control Device ID Number	Control Efficiency %
		TPH	TPY		
TP-1	Truck to CS-1	2.1	18,250	APCD-1	99.9
TP-2	Truck to E3-1 THROUGH E3-5	11.7	102,200	WS	75
TP-3	Front End Loader to AB-1	4.2	36,500	NO	0
TP-4	Front End Loader to AB-2	4.2	36,500	NO	0
TP-5	AB-2 to BC-2	170.0	1,489,200	PE	50
TP-6	AB-1 to BC-1	165.0	1,445,400	PE	50
TP-7	BC-1 to CRS-1	0.0	0	FE	80
TP-8	<del>CRS-1 to BC-2</del> BC-1 TO BC-2	100.0	876,000	FE	80
TP-9	BC-2 to AB-3	200.0	1,752,000	PE	50
TP-10	AB-3 to WH-1	200.0	1,752,000	PE	50
TP-11	WH-1 to BC-3	165.0	1,445,400	PE	50
TP-12	BC-3 to AH-1	165.0	1,445,400	PE	50
TP-13	AH-1 to CM-1	80.0	700,800	PE	50
TP-14	CS-1 to SC-1	3.5	30,660	BH	99.9
TP-15	SC-1 to WH-2	3.5	30,660	BH	99.9
TP-16	WH-2 to CM-1	10.0	87,600	FE	80
TP-17	CM-1 to BC-4	80.0	700,800	NO	0
TP-18	CM-1 to BC-5	80.0	700,800	NO	0
TP-19	CM-1 to BC-6	80.0	700,800	NO	0
TP-20	BC-4 to BC-7	80.0	700,800	NO	0
TP-21	BC-5 to BC-7	80.0	700,800	NO	0

\*removed 2015 not installed  
 \*modified 2015

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TP-22	BC-6 to BC-7	80.0	700,800	NO	0
TP-23	BC-7 to BLM-1	90.0	788,400	NO	0
TP-24	Front End Loader to AB-4	4.2	36,500	NO	0
TP-25	AB-4 to WH-3	145.0	1,270,200	PE	50
TP-26	WH-3 to BC-8	145.0	1,270,200	PE	50
TP-27	BC-8 to CM-2	145.0	1,270,200	FE	80
TP-28	CS-1 to SC-2	1.75	15,330	BH	99.9
TP-29	SC-2 to WH-4	1.75	15,330	BH	99.9
TP-30	WH-4 to CM-2	2.0	17,520	BH	99.9
TP-31	CM-2 to BC-9	20.0	175,200	NO	0
TP-32	CM-2 to BC-10	20.0	175,200	NO	0
TP-33	BC-9 to Pour Mold	80.0	700,800	NO	0
TP-34	BC-10 to Pour Mold	80.0	700,800	NO	0
TP-35	Truck to E3-6 THROUGH E3-11	40.0	350,000	WS	75
TP-36	Front End Loader to Wholesale Loadout	40.0	350,000	WS	75

\*new 2015  
 \*new 2015

Transfer Point ID No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
TP-1	1.521	6,661	0.002	0.007	0.979	4,289	0.001	0.004
TP-2	0.081	0.353	0.020	0.088	0.039	0.169	0.010	0.042
TP-3	0.029	0.126	0.029	0.126	0.014	0.060	0.014	0.060
TP-4	0.029	0.126	0.029	0.126	0.014	0.060	0.014	0.060
TP-5	1.173	5,138	0.587	2,569	0.561	2,457	0.281	1,229
TP-6	1.139	4,987	0.569	2,493	0.545	2,385	0.272	1,192
TP-7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TP-8	0.690	3,022	0.138	0.604	0.330	1,445	0.066	0.289
TP-9	1.380	6,044	0.690	3,022	0.660	2,891	0.330	1,445
TP-10	0.960	4,205	0.480	2,102	0.560	2,453	0.280	1,226
TP-11	1.139	4,987	0.569	2,493	0.545	2,385	0.272	1,192
TP-12	1.139	4,987	0.569	2,493	0.545	2,385	0.272	1,192
TP-13	0.552	2,418	0.276	1,209	0.264	1,156	0.132	0.578
TP-14	2.555	11,191	0.003	0.011	1.645	7,205	0.002	0.007
TP-15	0.017	0.074	0.00002	0.00007	0.010	0.043	0.00001	0.00004
TP-16	5.720	25,054	1.144	5,011	1.560	6,833	0.312	1,367
TP-17	0.552	2,418	0.552	2,418	0.264	1,156	0.264	1,156
TP-18	0.552	2,418	0.552	2,418	0.264	1,156	0.264	1,156
TP-19	0.552	2,418	0.552	2,418	0.264	1,156	0.264	1,156
TP-20	0.552	2,418	0.552	2,418	0.264	1,156	0.264	1,156

TP-21	0.552	2,418	0.552	2,418	0.264	1,156	0.264	1,156
TP-22	0.552	2,418	0.552	2,418	0.264	1,156	0.264	1,156
TP-23	0.621	2,720	0.621	2,720	0.297	1,301	0.297	1,301
TP-24	0.029	0.126	0.029	0.126	0.014	0.060	0.014	0.060
TP-25	0.696	3,048	0.348	1,524	0.406	1,778	0.203	0.889
TP-26	1.001	4,382	0.500	2,191	0.479	2,096	0.239	1,048
TP-27	1.001	4,382	0.200	0.876	0.479	2,096	0.096	0.419
TP-28	1.278	5,595	0.001	0.006	0.823	3,603	0.001	0.004
TP-29	0.008	0.037	0.00001	0.00004	0.005	0.021	0.000005	0.000021
TP-30	1.144	5,011	0.001	0.005	0.312	1,367	0.000	0.001
TP-31	0.138	0.604	0.138	0.604	0.066	0.289	0.066	0.289
TP-32	0.138	0.604	0.138	0.604	0.066	0.289	0.066	0.289
TP-33	0.552	2,418	0.552	2,418	0.264	1,156	0.264	1,156
TP-34	0.552	2,418	0.552	2,418	0.264	1,156	0.264	1,156
TP-35	0.276	1,208	0.069	0.302	0.132	0.578	0.033	0.144
TP-36	0.276	1,208	0.069	0.302	0.132	0.578	0.033	0.144
<b>TOTALS</b>	<b>29,141</b>	<b>127,638</b>	<b>11,634</b>	<b>50,958</b>	<b>13,589</b>	<b>59,521</b>	<b>5,417</b>	<b>23,725</b>

**Note:**

- 1 The emission factor for Aggregate Transfer was used for all transfer points where aggregate, sand, and/or wet concrete is transferred as a worst case scenario.
- 2 Throughput for Transfer Points 3,4 and 24 were derived by dividing the total aggregate throughput equally between AB-1,2, and 4.
- 3 Emissions for transfer points 5 through 23 and 25 through 34 are calculated using throughputs shown on the Process Flow Diagram.
- 4 Throughputs for transfer points 1 and 2 are based upon throughput stated for haulroads.
- 5 Throughput for transfer point 36 uses the worst case scenario that all wholesale materials delivered to the facility are sold and loaded out.
- 6 All calculations are based on 8,760 hours per year.

**Emissions From UNPAVED HAULROADS**

**UNPAVED HAULROADS (Including all equipment traffic involved in process, haul trucks, endloaders, etc.)**

Source AP42, Fifth Edition, 13.2.2 Unpaved Roads, Revised 11/2006

Emission Estimate For Unpaved Haulroads at Industrial Sites (equation 1)

$$E = k \cdot (s/12)^a \cdot (W/3)^b = \text{lb/vmt}$$

Where:

k =	particle size multiplier	PM	PM-10
a =	empirical constant	4.90	1.50
b =	empirical constant	0.7	0.9
		0.45	0.45

s = silt content of road surface material (%) 10

For lb/hr  $(\text{lb/vmt}) \cdot (\text{miles per trip}) \cdot (\text{Max trips per hour})$   
 For Ton/yr  $(\text{lb/vmt}) \cdot (\text{miles per trip}) \cdot (\text{Max trips per year}) \cdot (1/2000)$

Item Number	Description	Number of wheels	Mean Vehicle Weight (tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips Per Hour	Maximum Trips Per Year	Control Device ID Number	Control Efficiency %
1	Cement Delivery	18	15	3	0.151	0.083	730	WS	70
2	Aggregate Delivery (Cement Plant)	14	13	3	0.208	0.583	5,110	WS	70
3	Front End Loader Activity (Cement Plant)	4	8	3	0.113	4.167	36,500	WS	70
4	Fork Truck Activity (Cement Plant)	4	4	3	0.227	5.417	47,450	WS	70
5	Load Out (Cement Plant)	14	13.5	3	0.284	0.625	5,475	WS	70
6	Wholesale Aggregate Delivery	18	26.7	3	0.07	0.830	7,275	WS	70
6	Wholesale Aggregate Delivery	10	25.8	3	0.07	0.242	2,121	WS	70
7	Wholesale Aggregate Load Out	18	26.7	3	0.07	0.092	808	WS	70
7	Wholesale Aggregate Load Out	10	25.8	3	0.07	2.058	18,030	WS	70
7	Wholesale Aggregate Load Out	4	4.6	3	0.07	1.998	17,500	WS	70
8	Wholesale Front End Loader Activity	4	8	3	0.035	13.318	116,667	WS	70

\*2015

\*2015

\*2015

\*2015

Item No.	PM			PM-10		
	Unccontrolled lb/hr	Controlled lb/hr	TPY	Unccontrolled lb/hr	Controlled lb/hr	TPY
1	0.11	0.03	0.15	0.03	0.14	0.01
2	1.01	0.30	1.33	0.30	1.31	0.09
3	3.16	0.95	4.15	0.93	4.08	0.28
4	6.04	1.81	7.93	1.78	7.80	0.53

4.62525

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5	1.51	6.60	0.45	1.98	0.44	1.95	0.13	0.58
6	0.67	2.94	0.20	0.88	0.20	0.87	0.06	0.26
6	0.19	0.84	0.06	0.25	0.06	0.25	0.02	0.07
7	0.07	0.33	0.02	0.10	0.02	0.10	0.01	0.03
7	1.64	7.17	0.49	2.15	0.48	2.12	0.14	0.63
7	0.73	3.20	0.22	0.96	0.22	0.95	0.06	0.28
8	3.13	13.71	0.94	4.11	0.92	4.05	0.28	1.21
<b>TOTALS</b>	<b>18.26</b>	<b>79.97</b>	<b>5.48</b>	<b>23.99</b>	<b>5.39</b>	<b>23.60</b>	<b>1.62</b>	<b>7.08</b>

1. Control Efficiency based on Water Truck with Water Spray.
2. All calculations are based on 8,760 hours per year.
3. Client provided Maximum Trips Per Day. Maximum Trips Per Year were calculated by multiplying Trips Per Day by 365. Maximum Trips per Hour were calculated by dividing Maximum Trips Per Year by 8,760.
4. Loadout calculations assume worst case scenario of all product delivered, being sold and loaded out.





**Emissions from Paved Haulroads**

INDUSTRIAL PAVED HAULROADS (Including all equipment traffic involved in process, haul trucks, endloaders, etc.)

Source: AP-42 Fifth Edition – 13.2.1 Industrial Paved Roads, last updated 1/2011

$$e = k(SL)^{0.91} \times (W)^{1.02}$$

Ib/Vehicle Mile Traveled (VMT)

Where:

k =	Particle size multiplier	PM	PM-10
SL =	Road surface silt loading (g/m <sup>2</sup> )	0.011 12	0.0022 12

Item Number	Description	Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number*	Control Efficiency (%)
1	Cement Delivery	15	0.019	0.083	730	WS	70
2	Aggregate Delivery (Cement Plant)	13	0.019	0.583	5,110	WS	70
5	Load Out (Cement Plant)	13.5	0.019	0.625	5,475	WS	70
6	Wholesale Aggregate Delivery	26.7	0.034	0.830	7,275	WS	70
6	Wholesale Aggregate Delivery	25.8	0.034	0.242	2,121	WS	70
7	Wholesale Aggregate Load Out	26.7	0.034	0.092	808	WS	70
7	Wholesale Aggregate Load Out	25.8	0.034	2.058	18,030	WS	70
7	Wholesale Aggregate Load Out	4.6	0.034	1.998	17,500	WS	70

For lb/hr (lb/vmt)\*(miles per trip)\*(Max trips per hour)  
 For Ton/yr (lb/vmt)\*(miles per trip)\*(Max trips per year)\*(1/2000)

**SUMMARY OF PAVED HAULROAD EMISSIONS**

Item No.	PM		PM-10	
	Uncontrolled	Controlled	Uncontrolled	Controlled
	lb/hr	TPY	lb/hr	TPY
1	0.0026	0.000013	0.0001	0.000011
2	0.0160	0.000089	0.0005	0.000550
5	0.0178	0.000096	0.0005	0.000632

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6	0.0850	0.000415	0.0025	0.0000415	0.0170	0.002026	0.0051	0.002026
6	0.0239	0.000121	0.0007	0.0000121	0.0048	0.000172	0.0014	0.000172
7	0.0094	0.000046	0.0003	0.0000046	0.0019	0.000025	0.0006	0.000025
7	0.2034	0.001028	0.0061	0.0001028	0.0407	0.012447	0.0122	0.012447
7	0.0340	0.000998	0.0010	0.0000998	0.0068	0.011725	0.0020	0.011725
<b>TOTALS</b>	<b>0.01859</b>	<b>0.00010</b>	<b>0.00056</b>	<b>0.00001</b>	<b>0.00372</b>	<b>0.00056</b>	<b>0.00112</b>	<b>0.00056</b>

## Emissions From WIND EROSION OF STOCKPILES

**Source:** Air Pollution Engineering Manual, Storage Pile Wind Erosion (Active Storage)  
 $E = 1.7^{*}[s/1.5]^{*}[(365-p)/235]^{*}[f/15] = (\text{lb/day/acre})$

Where:

s =	silt content of material			3
p =	number of days with >0.01 inch of precipitation per year			157
f =	percentage of time that the unobstructed wind speed exceeds 12 mph at the mean pile height			20

Source ID No.	Stockpile Description	Silt Content of Material %	Stockpile base area Max. sqft	Control Device ID Number	Control Efficiency %
E3-1	Sand	3	1,800	WS	75
E3-2	Limestone	3	1,800	WS	75
E3-3	Stalite	3	1,800	WS	75
E3-4	Sand	3	640	WS	75
E3-5	Limestone	3	640	WS	75
E3-6	Wholesale Limestone	3	1,569.75	WS	75
E3-7	Wholesale Limestone	3	1,569.75	WS	75
E3-8	Wholesale Limestone	3	1,569.75	WS	75
E3-9	Wholesale Limestone	3	1,569.75	WS	75
E3-10	Wholesale Limestone	3	1,569.75	WS	75
E3-11	Wholesale Sand	3	1,225.00	WS	75

\*2015  
 \*2015  
 \*2015  
 \*2015  
 \*2015  
 \*2015  
 \*2015  
 \*2015  
 \*2015  
 \*2015

Stockpile ID No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
E3-1	2.844	12.456	0.711	3.114	1.337	5.854	0.334	1.464
E3-2	2.844	12.456	0.711	3.114	1.337	5.854	0.334	1.464
E3-3	2.844	12.456	0.711	3.114	1.337	5.854	0.334	1.464
E3-4	1.011	4.429	0.253	1.107	0.475	2.081	0.119	0.520
E3-5	1.011	4.429	0.253	1.107	0.475	2.081	0.119	0.520
E3-6	2.480	10.862	0.620	2.716	1.166	5.105	0.291	1.276

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E3-7	2.480	10.862	0.620	2.716	1.166	5.105	0.291	1.276
E3-8	2.480	10.862	0.620	2.716	1.166	5.105	0.291	1.276
E3-9	2.480	10.862	0.620	2.716	1.166	5.105	0.291	1.276
E3-10	2.480	10.862	0.620	2.716	1.166	5.105	0.291	1.276
E3-11	1.935	8.477	0.484	2.119	0.910	3.984	0.227	0.996
<b>TOTALS</b>	<b>24.889</b>	<b>109.012</b>	<b>6.222</b>	<b>27.253</b>	<b>11.698</b>	<b>51.236</b>	<b>2.924</b>	<b>12.809</b>

1. Control Efficiency is for water sprays only. However, stockpiles are enclosed with a 3 sided structure with concrete floor in addition to water sprays.
2. PM-10 is assumed to be 47% of total PM.
3. All calculations are based on 8,760 hours per year.

**CRUSHING**

Source: AP-42, Fifth Edition, Revised 8/2004

11.19.2-2 Emission Factors for Crushed Stone Processing Operations  
 Fines Crushing (material with output size of 3/16th inch or less)

PM Emission Factor: **0.039** lb/ton

PM-10 Emission Factor **0.015** lb/ton

Source ID	Throughput		Uncontrolled PM Emissions		Control Device	Control Efficiency (%)	Controlled PM Emissions	
	(TPH)	(TPY)	(lb/hr)	(TPY)			(lb/hr)	(TPY)
CRS-1	0	0	0.00	0	FE	80	0.00	0.00

Source ID	Throughput		Uncontrolled PM-10 Emissions		Control Device	Control Efficiency (%)	Controlled PM-10 Emissions	
	(TPH)	(TPY)	(lb/hr)	(TPY)			(lb/hr)	(TPY)
CRS-1	0	0	0	0.00	FE	80	0.00	0.00

1. All calculations are based on 8,760 hours per year.

**NOT INSTALLED/REMOVED  
 100 TPH / 876,000 TPY Permitted**

**FUEL OIL TANK (WORKING LOSSES)**

Storage Tank I.D	Material Stored	Storage Tank Capacity (gallons)	No of Turnovers	Throughput (gallons)	VOC Emissions (lbs/year)	VOC Emissions (tons/year)
Tank 1	No. 2 Fuel Oil	2,000	0.0	0	0	0.0000
Tank 2	No. 2 Fuel Oil	1,000	31.2	31,200	0.78	0.00039
Tank 3	No. 2 Fuel Oil	1,000	31.2	31,200	0.78	0.00039

\*removed 2014  
\*new 2014

**FUEL OIL TANK (BREATHING LOSSES)**

Storage Tank I.D	Material Stored	Storage Tank Capacity (gallons)	No of Turnovers	Maximum Throughput (gallons)	VOC Emissions (lbs/year)	VOC Emissions (tons/year)
Tank 1	No. 2 Fuel Oil	2,000	0.0	0	0.00	0.000000
Tank 2	No. 2 Fuel Oil	1,000	31.2	31,200	0.55	0.000275
Tank 3	No. 2 Fuel Oil	1,000	31.2	31,200	0.55	0.000275

\*removed 2014  
\*new 2014

Total Tank Yearly VOC Emissions: 2.66      0.0007

**Tank Filling - Hourly Emission Calculations**

The working loss refers to the loss of vapors as a result of tank filling or emptying. Fixed roof tank working losses can be estimated from (AP-42 Chapter 7.1 Equation 1-29):

$$Lw = 0.001 \times Mv \times Pva \times Q \times Kn \times Kp \times \%VOC/HAP \text{ Content}$$

where:

- Mv = vapor molecular weight, lb/lb-mole
- Pva = vapor pressure at daily average liquid surface temperature, psia
- Q = liquid throughput (bbl/yr, bbl/hr) 1 bbl = 42 gallon
- Kn = 1 for turnovers <=36 OR for turnovers >36, Kn = (180 + N)/6N
- Kp = working loss product factor, dimensionless; for crude oils Kp = 0.75; for all other organic liquids, Kp = 1

Rhodes Brick Block Company  
Redhouse, WV Facility  
WV Rule 13 Permit Modification Application

Checked By: JFN

**Notes:**

1. Tank emissions were calculated using TANKS Version 4.0 emission estimation software.
2. All calculations are based on 8,760 hours per year.

### STEAM GENERATOR (NATURAL GAS FIRED)

Fuel Usage

Steam Generator SG-1	2,648	ft <sup>3</sup> /hr	23,199,280	ft <sup>3</sup> /yr
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Criteria Pollutants	Emission Factor <sup>1</sup> lbs/10 <sup>6</sup> ft <sup>3</sup>	Uncontrolled Emissions	
		lbs/hr	tons/year
<b>Criteria Air Pollutants</b>			
Total PM / PM-10 / PM-2.5 <sup>2</sup>	7.60	0.020	0.088
Sulfur Dioxide	0.60	0.002	0.007
Nitrogen Oxides	100.00	0.265	1.160
Carbon Monoxide	84.00	0.222	0.974
Volatile Organic Compounds	5.50	0.015	0.064
<b>Greenhouse Gases</b>			
Methane	2.30	0.006	0.027
Nitrous Oxide	2.20	0.006	0.026
Carbon Dioxide	120,000	317.80	1391.96
<b>Hazardous Air Pollutants</b>			
Formaldehyde	0.075	0.0002	0.0009
Lead	0.0005	1.32E-06	5.80E-06
Benzene	0.0021	5.56E-06	2.44E-05
Dichlorobenzene	1.20E-03	3.18E-06	1.39E-05
Hexane	1.80	0.0048	0.0209
Naphthalene	0.00061	1.62E-06	7.08E-06
Toluene	0.0034	9.00E-06	3.94E-05
Polycyclic Organic Matter	0.0E+00	0.00E+00	0.00E+00
Arsenic	2.00E-04	5.30E-07	2.32E-06
Beryllium	1.20E-05	3.18E-08	1.39E-07
Chromium	1.40E-03	3.71E-06	1.62E-05
Cobalt	8.40E-05	2.22E-07	9.74E-07
Manganese	3.80E-04	1.01E-06	4.41E-06
Mercury	2.60E-04	6.89E-07	3.02E-06
Nickel	2.10E-03	5.56E-06	2.44E-05

Rhodes Brick Block Company  
Redhouse, WV Facility  
WV Rule 13 Permit Modification Application

Checked By: JFN

Selenium	2.40E-05	6.36E-08	2.78E-07
Cadmium	1.10E-03	2.91E-06	1.28E-05
<b>TOTAL HAPS</b>	<b>0.01</b>	<b>0.02</b>	

1. Source: AP-42, Fifth Edition, 1.4 Natural Gas Combustion, Revised 7/1998
2. All PM is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM<sub>10</sub>, PM<sub>2.5</sub> or PM emissions.

**DO NOT PRINT - FOR ATTACHMENT M**

<b>UNCONTROLLED EMISSIONS</b>		
<b>POLLUTANT</b>	<b>lb/hr</b>	<b>grains/acf</b>
PM	6.52	0.76
PM-10	3.77	0.44
Arsenic	8.62E-04	1.01E-04
Beryllium	2.51E-07	2.92E-08
Cadmium	4.46E-06	5.20E-07
Chromium	1.46E-04	1.70E-05
Lead	4.85E-05	5.66E-06
Manganese	8.95E-03	1.04E-03
Nickel	5.74E-04	6.70E-05
Phosphorus	2.19E-03	2.55E-04

<b>CONTROLLED EMISSIONS</b>		
<b>POLLUTANT</b>	<b>lb/hr</b>	<b>grains/acf</b>
PM	6.52E-03	7.61E-04
PM-10	3.77E-03	4.40E-04
Arsenic	1.68E-04	1.96E-05
Beryllium	2.51E-10	2.92E-11
Cadmium	2.39E-07	2.79E-08
Chromium	2.84E-05	3.31E-06
Lead	7.65E-06	8.93E-07
Manganese	1.23E-03	1.43E-04
Nickel	6.58E-05	7.68E-06
Phosphorus	4.04E-04	4.72E-05

# TANKS 4.0.9d

## Emissions Report - Detail Format

### Tank Identification and Physical Characteristics

#### Identification

User Identification: T-2 T-3 (E-5)  
City: Redhouse  
State: West Virginia  
Company: Rhodes Brick & Block Company  
Type of Tank: Horizontal Tank  
Description: Off Road Diesel Fuel

#### Tank Dimensions

Shell Length (ft): 12.00  
Diameter (ft): 4.00  
Volume (gallons): 1,000.00  
Turnovers: 31.20  
Net Throughput(gal/yr): 31,200.00  
Is Tank Heated (y/n): N  
Is Tank Underground (y/n): N

#### Paint Characteristics

Shell Color/Shade: Red/Primer  
Shell Condition: Good

#### Breather Vent Settings

Vacuum Settings (psig): -0.03  
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)

# TANKS 4.0.9d

## Emissions Report - Detail Format

### Liquid Contents of Storage Tank

**T-3 (E-5)**

**T-2 - Horizontal Tank**  
**Redhouse, West Virginia**

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol Weight	Basis for Vapor Pressure Calculations
		Avg	Min	Max		Avg	Min	Max					
Distillate fuel oil no. 2	All	66.21	54.54	77.87	59.32	0.0081	0.0054	0.0114	180.0000		188.00	Option 1: VP60 = .0065 VP70 = .0019	

# TANKS 4.0.9d

## Emissions Report - Detail Format

### Detail Calculations (AP-42)

T-3, E-5  
**T-2-- Horizontal Tank**  
**Redhouse, West Virginia**

**Annual Emission Calculations**

Standing Losses (lb): 0.6519  
 Vapor Space Volume (cu ft): 96.0487  
 Vapor Density (lb/cu ft): 0.0002  
 Vapor Space Expansion Factor: 0.0849  
 Vented Vapor Saturation Factor: 0.9991

Tank Vapor Space Volume: 96.0487  
 Vapor Space Volume (cu ft): 4.0000  
 Tank Diameter (ft): 7.8166  
 Effective Diameter (ft): 2.0000  
 Vapor Space Outage (ft): 12.0000  
 Tank Shell Length (ft): 12.0000

Vapor Density: 0.0002  
 Vapor Density (lb/cu ft): 130.0000  
 Vapor Molecular Weight (lb/lb-mole): 0.0081  
 Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 525.8765  
 Daily Avg. Liquid Surface Temp. (deg. R): 54.9833  
 Daily Average Ambient Temp. (deg. F): 10.731  
 Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)): 518.9693  
 Liquid Bulk Temperature (deg. R): 0.9900  
 Tank Paint Solar Absorptance (Shell): 1,250.5726  
 Daily Total Solar Insulation Factor (Btu/sqft. day):

Vapor Space Expansion Factor: 0.0849  
 Vapor Space Expansion Factor: 46.6683  
 Daily Vapor Temperature Range (deg. R): 0.0060  
 Daily Vapor Pressure Range (psia): 0.0600  
 Breather Vent Press. Setting Range(psia): 0.0081  
 Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 0.0054  
 Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia): 0.0114  
 Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia): 525.8765  
 Daily Avg. Liquid Surface Temp. (deg R): 514.2084  
 Daily Min. Liquid Surface Temp. (deg R): 537.5436  
 Daily Max. Liquid Surface Temp. (deg R): 21.5333  
 Daily Ambient Temp. Range (deg. R):

Vented Vapor Saturation Factor: 0.9981  
 Vented Vapor Saturation Factor: 0.0081  
 Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 2.0000  
 Vapor Space Outage (ft):

Working Losses (lb): 0.7775  
 Vapor Molecular Weight (lb/lb-mole): 130.0000  
 Vapor Pressure at Daily Average Liquid



**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**  
**T-2 (E-3)**  
**T-2-- Horizontal Tank**  
**Redhouse, West Virginia**

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Distillate fuel oil no. 2	0.78	0.55	1.33

**ATTACHMENT 02 - O**

**MONITORING / RECORD / REPORTING / TESTING  
PLANS**

## **MONITORING / RECORDKEEPING / REPORTING / TESTING**

### **INTRODUCTION**

R13-2937 was issued to Rhodes Brick & Block Company on October 15, 2012 and also became effective on the same date. This permit authorized the construction of a block and precast concrete plant (a manufacturing facility) near the community of Red House, in Putnam County. The precast segment of the overall manufacturing process was completed and production began on August 1, 2013. On April 17, 2014 production began from the block plant.

During the first quarter of 2015, three rectangular shaped stockpile storage units, each having an open top and an open end, and a set of truck scales, were constructed prior to an appropriate permit modification application being filed and duly process by the Division of Air Quality. These three stockpile storage units are identified in this modification as being E3-6, E3-7 and E3-8. The remaining three stockpile storage units are identified in this modification as being E3-9, E3-10 and E3-11.

This wholesale sales outlet is a stand-alone business enterprise owned and operated by Rhodes Brick & Block Company. It is not, as is plainly described in the Process Flow Diagram (Attachment F), connected to Rhodes' block and precast concrete manufacturing process. Be that as it may, since the activities that will be associated with the wholesale marketing of various pre-sized limestone products, and sands, purchased by Rhodes from independent third party vendors and delivered to the Red House Plant for stockpiling and reselling, will produce fugitive particulate emissions, these annually generated fugitive emissions will need to be reported as a component of the annual Certified Emission Statement Invoice.

### **MONITORING REQUIREMENTS**

None Required.

### **TESTING PLANS**

None Required.

### **REPORTING REQUIREMENTS**

Adequate records will be maintained in order to determine, on a calendar-year basis, the quantity of fugitive particulate emissions attributable to this wholesale outlet for sized limestone and sand. The fugitive emissions generated by this wholesale outlet will be combined with those particulate emissions generated by the manufacturing process

permitted under the original R13-2937 permit and timely reported in all forthcoming Certified Emissions Statement Invoice filings.

#### ODOR COMPLAINTS

For the purposes of 45CSR4, Rhodes Brick & Block will maintain a record of all odor complaints received. Such record shall contain an assessment of the validity of the complaints as well as any corrective actions taken.

**ATTACHMENT 02 - P**

**PUBLIC NOTICE**

**AIR QUALITY PERMIT NOTICE**  
**Notice of Application**

Notice is given that Rhodes Trucking dba Rhodes Brick & Block Company has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Modification Permit for its concrete block and brick manufacturing plant located on Charleston Road., Red House, in Putnam County, West Virginia. The latitude and longitude coordinates are N38.5458° and W81.878°.

The applicant estimates the increased potential to discharge the following Regulated Air Pollutants will be:

PM: +20.13 TPY  
PM10: +8.27 TPY  
Volatile Organic Compounds (VOC): - 0.01 TPY

Startup of operation is planned to begin on or about the 30<sup>th</sup> day of September, 2015. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57<sup>th</sup> Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 13th day of August, 2015.

By: Rhodes Brick & Block Company  
Richard L. Rhodes  
Vice President  
107 Industrial Road  
St. Albans, West Virginia 25177 H

**AIR QUALITY PERMIT  
NOTICE  
Notice of Application**

Notice is given that Rhodes Trucking Corporation dba Rhodes Brick & Block Company has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Modification Permit for its existing Block and Precast Concrete Plant on Charleston Road., Red House, in Putnam County, West Virginia. The latitude and longitude coordinates are 38.5458°N and 81.878°W.

The applicant estimates the potential to discharge the following Regulated Air Pollutants will be:

PM: +20.13 TPY  
PM10: +8.27 TPY  
Volatile Organic Compounds (VOC): -0.01 TPY

Startup of operation is anticipated to be on October 1, 2015, or as soon as the modified permit is issued. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

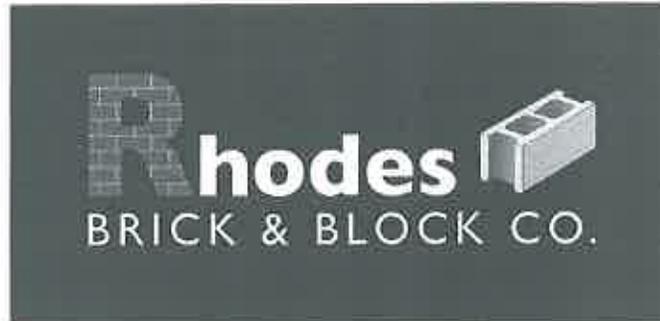
Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1227, during normal business hours.

Dated this the 13th day of August, 2015.

By: Rhodes Brick & Block  
Company  
Richard L. Rhodes  
Vice President  
107 Industrial Road  
St. Albans, West Virginia  
25177  
(606852)

**SECTION 03**

**NEW POSTED SPEED LIMIT FOR PLANT ROADWAYS**



11657 Charleston Road  
Red House, WV 25168  
304-586-9000 Office  
304-586-9002 Fax

June 26, 2015

To Whom It May Concern:

Please be advised that ALL trucks entering or operating on Rhodes Brick & Block Company property at the Red House facility **MUST** obey the posted speed limit of 3 (Three) Miles Per Hour at all times. This requirement will minimize fugitive dust generation by vehicular traffic and will be strictly enforced.

We appreciate your cooperation.

Thank you.

A handwritten signature in blue ink, appearing to read 'Richard L. Rhodes', is written over the typed name.

Richard L. Rhodes  
Vice President