

**REGULATION 13 PERMIT APPLICATION FOR  
DRILLING MUD MIXING OPERATION  
INTEGRITY-FRIENDLY WV SITE  
TYLER COUNTY, WEST VIRGINIA**

*Prepared for:*

**Integrity Delaware, LLC  
(Integrity Industries, LLC)**  
2000 W. Sam Houston Parkway S., Suite 400  
Houston, Texas 77042

*Prepared by:*

**Potesta & Associates, Inc.**  
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Project No. 0101-14-0483-005

November 2015

**POTESTA**

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**SECTION I - III**

**GENERAL APPLICANT INFORMATION**



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/daq](http://www.dep.wv.gov/daq)

**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):

Integrity Delaware, LLC (Integrity Industries, LLC)

2. Federal Employer ID No. (FEIN):

74-2448483

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

Integrity-Friendly WV Site

4. The applicant is the:

- OWNER     OPERATOR     BOTH

5A. Applicant's mailing address:

2000 W. Sam Houston Parkway S., Suite 400  
Houston, Texas 77042

5B. Facility's present physical address:

162 Industrial Park Road  
Friendly, West Virginia 26146

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: Lubrizol 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:    Applicant leases the site.

⇒ 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.): Drilling Mud Mixing Operation

10. North American Industry Classification System (NAICS) code for the facility:

325998

11A. DAQ Plant ID No. (for existing facilities only):

095-00025

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

R13-3038

*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**.

The facility is located at the Bens Run Industrial Park in Tyler County which is adjacent to WV Route 2 North of Bens Run, WV.

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

NA

12C. Nearest city or town:

Bens Run

12D. County:

Tyler

12.E. UTM Northing (KM): 4,369.37119

12F. UTM Easting (KM): 491.56164

12G. UTM Zone: 17

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

New Facility

14A. Provide the date of anticipated installation or change: 01/01/2016

⇒ If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen:

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

03/03/2016

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). NA

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

Hours Per Day 24 Days Per Week 7 Weeks Per Year 52

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 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        |  |
- General Emission Unit, specify: Drilling Mud Mixers

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

29. Check all applicable **Air Pollution Control Device Sheets** listed below: None

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Absorption Systems | <input checked="" 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 |

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:

- |  |   |
|--|---|
| <input type="checkbox"/> Authority of Corporation or Other Business Entity | <input type="checkbox"/> Authority of Partnership         |
| <input type="checkbox"/> Authority of Governmental Agency                  | <input type="checkbox"/> 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  DATE: 11-10-15  
*(Please use blue ink)* *(Please use blue ink)*

35B. Printed name of signee: Max Duncan

35C. Title: President

35D. E-mail:  
mduncan@integrityindustries.com

36E. Phone: (361) 813-1433

36F. FAX: Use Email

36A. Printed name of contact person (if different from above): Brett Aukerman

36B. Title: Plant Manager

36C. E-mail:  
baukerman@integrityindustries.com

36D. Phone: (440) 347-8462

36E. FAX: Use email

**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 checked="" 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.*

**ATTACHMENT A**  
**BUSINESS CERTIFICATE**

# State of West Virginia



## Certificate

*I, Natalie E. Tennant, Secretary of State of the State of West Virginia, hereby certify that*

**INTEGRITY DELAWARE, LLC**

Control Number: 9A7DZ

a limited liability company, organized under the laws of the State of Delaware has filed its "Application for Certificate of Authority" in my office according to the provisions of West Virginia Code §31B-10-1002. I hereby declare the organization to be registered as a foreign limited liability company from its effective date of September 29, 2014, until a certificate of cancellation is filed with our office.

Therefore, I hereby issue this

### **CERTIFICATE OF AUTHORITY OF A FOREIGN LIMITED LIABILITY COMPANY**

to the limited liability company authorizing it to transact business in West Virginia



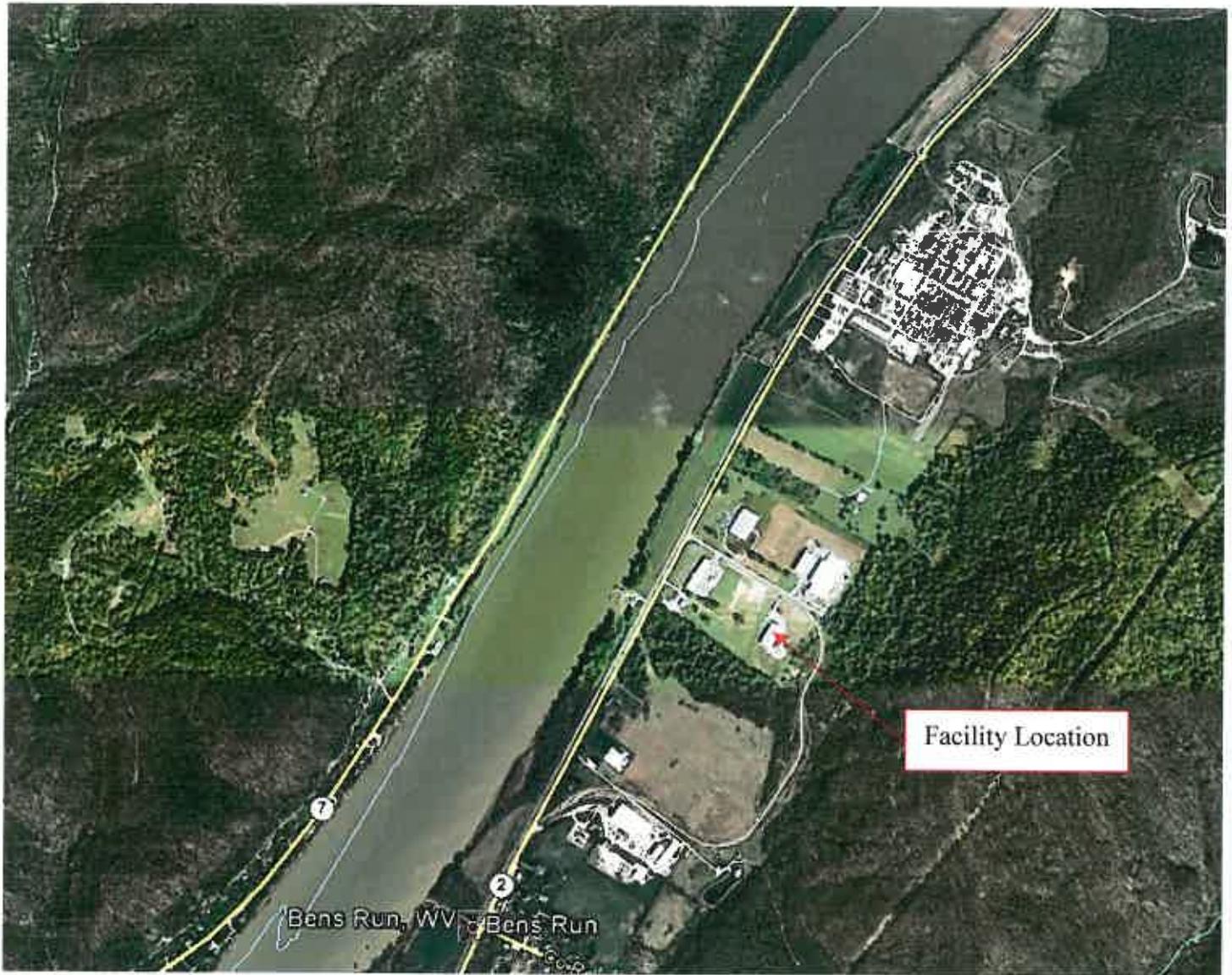
*Given under my hand and the Great Seal of the State of West Virginia on this day of September 29, 2014*

*Natalie E. Tennant*

Secretary of State

**ATTACHMENT B**

**AREA MAP**



7012 MacCorkle Avenue, S.E  
Charleston, West Virginia 25304  
Phone: (304) 342-1400  
Fax: (304) 343-9031

**Area Map**  
**Integrity-Friendly WV Site**  
**Integrity Industries, LLC**  
**Tyler County, West Virginia**

**ATTACHMENT C**

**INSTALLATION AND START UP SCHEDULE**

## **ATTACHMENT C**

### **INSTALLATION AND STARTUP SCHEDULE**

Integrity Industries, LLC (Integrity) will install the equipment detailed in this application after the approval of the permit. The equipment will take about two (2) weeks to install at the site and then will be operational. We anticipate installing the equipment in January 2016. Not all of the tanks may be installed for the initial operations. The equipment which is not installed during the initial construction will be installed as required. Integrity will notify the Division of Air Quality of installation of systems when they occur.

**ATTACHMENT D**  
**REGULATORY DISCUSSION**

## **ATTACHMENT D**

### **REGULATORY DISCUSSION**

This facility is subject to Regulation 7 (45CSR7) and Regulation 13 as described below.

1. **45CSR7 - To Prevent and Control Particulate Matter Air Pollution from Manufacturing Processes and Associated Operations**

45CSR7 applies to “source operations” located at “manufacturing processes” that, excluding those manufacturing processes specified under §45-7-10.5 and §45-7-10.6, have the potential to emit particulate matter and acid gases. The facility is subject to the requirements of 45CSR7 because it meets the definition of a “manufacturing process” as defined in Section 2.20. The source operations subject to 45CSR7 are the transport, transfer, and mixing of the materials in the mixers.

Section 3.1 of 45CSR7 sets an opacity limit of 20% on applicable source operations and the rule defines this source as a type “a” source.

2. **45CSR13 - Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation**

The proposed facility is subject to the requirements of 45CSR13 because it will result in a potential to emit of controlled emissions greater than six (6) pounds per hour and ten (10) tons per year of a regulated air pollutant (PM).

**ATTACHMENT E**

**PLOT PLAN**

No.	Date	Revision

CD	10/15/16
DR	10/15/16
CH	10/15/16
AP	10/15/16
AS	10/15/16
CS	10/15/16
LS	10/15/16
TS	10/15/16

**LEGEND**

	PAVED OR ROOFED.....95,092 SQ. FT.
	GRAVEL.....54,403 SQ. FT.
	BARREN.....0 SQ. FT.
	VEGETATED.....97,527 SQ. FT.
	DROP INLET
	OUTLET
	FLOW DIRECTION

TOTAL PROPERTY LEASED BY STEVE SIMPSON & ASSOCIATES APPROX 9.65 AC.

GRAVELED AREA

SYNTHETIC OIL MUD TANKS 1-16 500 BBL (TK 1-16)

SYNTHETIC OIL MIXING PLANT (MT1)

DIESEL MUD TANKS 1-8 500 BBL (TK22-27)

DIESEL MIXING PLANT (MT2)

8,000 GAL. WATER TANK (TK31)

BARITE SILO (BRS2)

DIESEL TANKS 500 BBL (TK28-30)

240 BBL. CaCl2 (TK20-21)

BASE OIL TANKS 2-385 BBL, 1-500 BBL (TK17-19)

BARITE SILO (BRS1)

100 GAL. DIESEL TANK

RAW MATERIAL STORAGE

BASE OIL  
BASE OIL  
BASE OIL  
CaCl2 WATER  
MIXER

EXISTING MUD STORAGE FACILITY

OUTLET 001

NOTE: PROPERTY LINES ARE AN APPROXIMATE BEST FIT ESTIMATE BASED ON THE RECORDED DEED AND INFORMATION AS FOUND ON THE TOPOGRAPHIC MAPPING. NO FIELD WORK WAS PERFORMED BY POTESTA AND ASSOCIATES, INC. FOR THIS RESEARCH DONE.



MAPPING REFERENCE: THESE TOPOGRAPHIC MAPPINGS PROVIDED TO POTESTA & ASSOCIATES, INC. (POTESTA) BY REGIONAL AERIAL MAPPING OF PITTSBURGH, PA. IN FLOOR COORDINATE S. 2011. GRID CONTROL ESTABLISHED BY POTESTA FIELD SURVEY GROUP. HORIZONTAL DATUM IS WEST VIRGINIA STATE PLANE COORDINATE, NAD 83 NORTH ZONE (48 FEET). VERTICAL DATUM IS BASED ON NAVD 83.

**PRELIMINARY**

ISSUE DATE 10/27/2016

Client  
INTEGRITY DELAWARE, LLC  
2770 EAST CORRAL  
KINGSVILLE, TEXAS 78663

This  
SITE SKETCH  
INTEGRITY - FRIENDLY WV SITE  
BENS RUN INDUSTRIAL PARK,  
TYLER CO., WV.

1  
Drawing No.

POTESTA & ASSOCIATES, INC.  
ENGINEERS AND ENVIRONMENTAL CONSULTANTS  
1813 Sandstone Ave. SE, Charleston, WV 25304  
TEL: (800) 940-1400 FAX: (304) 344-3991  
E-Mail Address: potesta@potesta.com



2016, Potesta, Inc. All Rights Reserved. Project: Integrity - Friendly WV Site. Date: 10/27/2016. File: 161027-Friendly WV Site - Site Sketch.dwg. Plot: 161027-Friendly WV Site - Site Sketch - 10/27/2016.

**ATTACHMENT F**  
**DETAILED PROCESS FLOW DIAGRAM**



**ATTACHMENT G**  
**PROCESS DESCRIPTION**

## **Attachment G**

### **Process Description**

Integrity Industries, LLC (INTEGRITY) recently had Steve Simpson & Associates, Inc. (Steve Simpson) air permit R13-3038 transferred to our ownership. Steve Simpson operated drilling mud mixing systems at the Bens Run, West Virginia site. INTEGRITY proposed to continue to produce drilling mud but will install a permanent facility that will be the Integrity-Friendly WV Site.

Currently, the equipment that Steve Simpson used is dismantled and some has been removed and part of it is being stored on the site. INTEGRITY is currently storing drilling mud on the site that is produced in our Pennsylvania facility and trucked to Bens Run. INTEGRITY is now proposing to install a permanent mud mixing operation. INTEGRITY's process is the same as Steve Simpson used. Base oils are mixed with ingredients to produce the required weighted drilling mud. Our mud will be produced when ordered and then shipped off site in tank trucks.

Material is delivered to the site by tank truck (brine water and base oils) and delivery truck for other additives which include dry bagged products and liquids in totes, drums, or pails. INTEGRITY makes two mud mixtures: (1) synthetic oil based mud and (2) diesel based mud which has specific uses in the industry. The difference between the two mud types is the base oil used in the mix. The remaining ingredients are the same but the amount of the ingredients used may differ order to order. The other ingredients are calcium chloride (liquid and powder), various Bentone products, diesel, water, barite, gel, lime, and various Synvert products. MSDS/SDS sheets are provided in Attachment H.

The pulling of the raw materials into the plant, batch mixing, and pumping off into storage tanks is accomplished using centrifugal pumps with a pump rate of approximately 2,000 gallons per minute. This pumping rate allows for proper mixing of the materials.

Barite is unloaded from trucks pneumatically to silos and also blown pneumatically to the mixers. When the barite silos are being filled, they vent to the mixers which have dust socks on them for control of particulate. Also, when barite is blown to the mixers, the transfer is also controlled by the same dust socks.

Smaller quantity materials (other than barite) are fed through a hopper from bags. The circulating material pulls the material into the fluid.

This is a batch process. When an order is received, the mud is mixed and stored in the hold tanks. Trucks will then load the material with pumps and remove it from the site. Some mud is returned and can be reused to make a new order of mud. The overall mud production is anticipated to be 500,000 gallons per year. Depending on the type of order, the returned mud may be used as part of the order batch or a fresh batch of mud may be required. Mud is made to order; therefore, there is not typically a lot of mud in storage unless we have received returned mud. Typical order sizes are 1,500 barrels.

**ATTACHMENT H**  
**MATERIAL SAFETY DATA SHEETS (MSDS)**

## Material Safety Data Sheet

# Barite



### 1. Product and Company Identification

<b>Material name</b>	<b>Barite</b>
<b>Patent Number</b>	Not available
<b>Chemical description</b>	Barite
<b>Revision date</b>	January-29-2010
<b>Version No.</b>	1
<b>CAS #</b>	Mixture
<b>Manufacturer information</b>	INTEGRITY INDUSTRIES INC. P O BOX 5342 Kingsville, TX 7836
<b>Supplier information</b>	INTEGRITY INDUSTRIES INC. P O BOX 5342 Kingsville, TX 78363

### 2. Hazards Identification

<b>Emergency overview</b>	<b>WARNING</b>  AVOID CREATING DUST. Cancer hazard. May cause cancer after repeated inhalation of spray or dust. Product dust may be irritating to eyes, skin and respiratory system. Prolonged exposure may cause chronic effects.
<b>OSHA regulatory status</b>	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
<b>Potential health effects</b>	
<b>Eyes</b>	Eye contact may result in corneal injury. Dust or powder may irritate eye tissue. Do not get this material in contact with eyes.
<b>Skin</b>	Avoid contact with the skin.
<b>Inhalation</b>	Do not breathe dust. This product contains crystalline silica that may cause silicosis and cancer. Prolonged inhalation may be harmful. May cause cancer by inhalation. Inhalation of dusts may cause respiratory irritation. For additional information on inhalation hazards, see Section 11 of this safety data sheet.
<b>Ingestion</b>	Do not ingest. Irritating to mouth, throat, and stomach.
<b>Target organs</b>	Eyes. Lungs. Respiratory system.

**Chronic effects**

Shortness of breath. Conjunctiva. May cause delayed lung damage. This product has the potential for generation of respirable dust during handling and use. Dust may contain respirable crystalline silica. Overexposure to dust may result in pneumoconiosis, a respiratory disease caused by inhalation of mineral dust, which can lead to fibrotic changes to the lung tissue, or silicosis, a respiratory disease caused by inhalation of silica dust, which can lead to inflammation and fibrosis of the lung tissue. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

**Signs and symptoms**

Discomfort in the chest. Shortness of breath. Corneal damage. Cough. Conjunctivitis.

**Potential environmental effects**

Ecological injuries are not known or expected under normal use.

**3. Composition / Information on Ingredients**

Components	CAS #	Percent
Barium Sulfate	7727-43-7	89 - 95
Crystalline Silica in the form of Quartz	14808-60-7	1 - 5

**4. First Aid Measures**

**First aid procedures**

**Eye contact**

Rinse with water. Get medical attention if irritation develops or persists.

**Skin contact**

Rinse with water. Get medical attention if irritation develops or persists.

**Inhalation**

Move to fresh air. Oxygen or artificial respiration if needed. Call a physician if symptoms develop or persist.

**Ingestion**

Rinse mouth. Get medical attention if symptoms occur.

**Notes to physician**

In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

**General advice**

If exposed or concerned: get medical attention/advice. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

**5. Fire Fighting Measures**

**Flammable properties**

Not a fire hazard. The product is not flammable.

**Extinguishing media**

**Suitable extinguishing media**

Water. Water fog. Dry chemical, CO2, water spray or regular foam.

**Protection of firefighters**

**Protective equipment and precautions for firefighters**

Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

**6. Accidental Release Measures**

**Personal precautions**

Local authorities should be advised if significant spillages cannot be contained. Ensure adequate ventilation. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas. Avoid inhalation of dust from the spilled material. Wear a dust mask if dust is generated above exposure limits.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so.

<b>Methods for containment</b>	Prevent entry into waterways, sewers, basements or confined areas. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product.
<b>Methods for cleaning up</b>	Sweep up or gather material and place in appropriate container for disposal. Avoid dust formation. After removal flush contaminated area thoroughly with water. Collect dust or particulates using a vacuum cleaner with a HEPA filter.

## 7. Handling and Storage

<b>Handling</b>	Do not breathe dust from this material. In case of insufficient ventilation, wear suitable respiratory equipment. Wear personal protective equipment. Do not get this material in contact with eyes. Do not get this material in contact with skin. Handle and open container with care. Wash thoroughly after handling. Avoid prolonged exposure. Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed.
<b>Storage</b>	Keep container tightly closed. Keep in a cool place. Keep in a well-ventilated place. Keep this material away from food, drink and animal feed. Keep out of the reach of children. Use care in handling/storage. Guard against dust accumulation of this material.

## 8. Exposure Controls / Personal Protection

**Exposure limits**

**ACGIH**

Components	CAS #	TWA	STEL	Ceiling
Barium Sulfate	7727-43-7	10 mg/m <sup>3</sup>	Not established	Not established
Crystalline Silica in the form of Quartz	14808-60-7	0.025 mg/m <sup>3</sup>	Not established	Not established

**OSHA**

Components	CAS #	TWA	STEL	Ceiling
Barium Sulfate	7727-43-7	15 mg/m <sup>3</sup>	Not established	Not established

<b>Exposure guidelines</b>	Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.
<b>Engineering controls</b>	Ensure adequate ventilation, especially in confined areas. Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL, suitable respiratory protection must be worn.
<b>Personal protective equipment</b>	
<b>Eye / face protection</b>	Wear dust goggles.
<b>Skin protection</b>	Protective gloves.
<b>Respiratory protection</b>	Wear respirator with dust filter. Use a particulate filter respirator for particulate concentrations exceeding the Occupational Exposure Limit.
<b>General hygiene considerations</b>	Do not breathe dust. When using do not eat or drink. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical & Chemical Properties

<b>Appearance</b>	Powder.
<b>Color</b>	Grey - Tan.
<b>Odor</b>	Odorless.
<b>Odor threshold</b>	Not available
<b>Physical state</b>	Solid.
<b>Form</b>	Solid
<b>pH</b>	Not available
<b>Melting point</b>	2876 °F (1580 °C)
<b>Freezing point</b>	2876 °F (1580 °C)
<b>Boiling point</b>	Not available
<b>Flash point</b>	Not available
<b>Evaporation rate</b>	Not available
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available
<b>Flammability limits in air, lower, % by volume</b>	Not available
<b>Vapor pressure</b>	Not available
<b>Vapor density</b>	Not available
<b>Specific gravity</b>	4.2 - 4.25 @ 20 C
<b>Relative density</b>	4.2246 g/cm <sup>3</sup> estimated
<b>Solubility (water)</b>	Insoluble in water
<b>Partition coefficient (n-octanol/water)</b>	Not available
<b>Auto-ignition temperature</b>	Not available
<b>Decomposition temperature</b>	Not available
<b>Bulk density</b>	1714 - 2163

## 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	Stable at normal conditions.
<b>Incompatible materials</b>	Fluoride. Powerful oxidizers.

## 11. Toxicological Information

<b>Acute effects</b>	Acute LD50: 10000 mg/kg estimated, Rat, Oral
<b>Component analysis - LD50</b>	
<b>Toxicology Data - Selected LD50s and LC50s</b>	
Crystalline Silica in the form of Quartz	14808-60-7 Oral LD50 Rat: 500 mg/kg
<b>Sensitization</b>	Not expected to be hazardous by OSHA criteria.
<b>Local effects</b>	Contact may irritate or burn eyes.

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**Chronic effects**

Hazardous by OSHA criteria. Prolonged or repeated exposure may cause lung injury. Prolonged exposure may cause chronic effects. In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

**Carcinogenicity**

Hazardous by OSHA criteria. Cancer hazard.

**ACGIH - Threshold Limit Values - Carcinogens**

Crystalline Silica in the form of Quartz      14808-60-7      A2 - Suspected Human Carcinogen

**NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens**

Crystalline Silica in the form of Quartz      14808-60-7      Known Human Carcinogen

**Neurological effects**

Not expected to be hazardous by OSHA criteria.

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**12. Ecological Information**

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**Ecotoxicity**

This product has no known eco-toxicological effects.

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**13. Disposal Considerations**

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**Disposal instructions**

This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

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**14. Transport Information**

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**Department of Transportation (DOT) Requirements**

Not regulated as dangerous goods.

**Canadian Transportation of Dangerous Goods (TDG) Requirements**

Not regulated as dangerous goods.

**IMDG**

Not regulated as dangerous goods.

**IATA**

Not regulated as dangerous goods.

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## 15. Regulatory Information

### Labelling

**Contains** Barium Sulfate, Crystalline Silica in the form of Quartz

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

**NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens**

Crystalline Silica in the form of Quartz      14808-60-7      Known Human Carcinogen

### Occupational Safety and Health Administration (OSHA)

**29 CFR 1910.1200 hazardous chemical**      Yes

### CERCLA (Superfund) reportable quantity

None

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

**Hazard categories**  
 Immediate Hazard - Yes  
 Delayed Hazard - Yes  
 Fire Hazard - No  
 Pressure Hazard - No  
 Reactivity Hazard - No

**Section 302 extremely hazardous substance**      No

**Section 311 hazardous chemical**      Yes

### Inventory status

Country(s) or region	Inventory name	On Inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)



## International regulations

### Canada - WHMIS - Ingredient Disclosure List

Crystalline Silica in the form of Quartz 14808-60-7 1 %

### IARC - Group 1 (Carcinogenic to Humans)

Crystalline Silica in the form of Quartz 14808-60-7 Monograph 68 [1997] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources)

## State regulations

**WARNING:** This product contains a chemical known to the State of California to cause cancer.

### U.S. - California - Proposition 65 - Carcinogens List

Crystalline Silica in the form of Quartz 14808-60-7 carcinogen, initial date 10/1/88 (airborne particles of respirable size)

### U.S. - Massachusetts - Right To Know List

Barium Sulfate 7727-43-7 Present  
Crystalline Silica in the form of Quartz 14808-60-7 Carcinogen; Extraordinarily hazardous

### U.S. - Minnesota - Hazardous Substance List

Barium Sulfate 7727-43-7 Present  
Crystalline Silica in the form of Quartz 14808-60-7 Carcinogen

### U.S. - New Jersey - Right to Know Hazardous Substance List

Crystalline Silica in the form of Quartz 14808-60-7 sn 1660

### U.S. - Pennsylvania - RTK (Right to Know) List

Barium Sulfate 7727-43-7 Present  
Crystalline Silica in the form of Quartz 14808-60-7 Present

### U.S. - Rhode Island - Hazardous Substance List

Crystalline Silica in the form of Quartz 14808-60-7 Toxic (dust)

### U.S. - Texas - Effects Screening Levels - Long Term

Barium Sulfate 7727-43-7 5 µg/m3 ESL (respirable)  
Crystalline Silica in the form of Quartz 14808-60-7 0.1 µg/m3 ESL (respirable, under review)

### U.S. - Texas - Effects Screening Levels - Short Term

Barium Sulfate 7727-43-7 50 µg/m3 ESL (respirable)  
Crystalline Silica in the form of Quartz 14808-60-7 1 µg/m3 ESL (under review)

## 16. Other Information

### Recommended restrictions

Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

### HMIS® ratings

Health: 1\*  
Flammability: 0  
Physical hazard: 0

### NFPA ratings

Health: 1  
Flammability: 0  
Instability: 0



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**Prepared by**

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**Issue date**

January-29-2010



# MATERIAL SAFETY DATA SHEET

Revision date: 03-Dec-2008

Supersedes: 10-Jul-2001

MSDS Number: 10823

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product name:** BENTONE® 155

**Product Use Description:** Rheological additive

**Company/Undertaking Identification**

Elementis Specialties, Inc.  
329 Wyckoffs Mill Road  
Hightstown, NJ 08520  
(609) 443-2000

Elementis Specialties, Inc.  
p/a Elementis Service Centre NV  
Pegasus Park  
De Kleetlaan 12A - P.O. Box 3  
B-1831 Diegem, Belgium  
+32 (0)2 790 76 00

**Emergency telephone number:** SGS Emergency Response Number: + 32 (0)3 575 55 55

Product Stewardship@elementis.com

## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

**Appearance:** Powder  
**Color:** Off-white  
**Odor:** Odourless

### WARNING

Harmful by inhalation  
May cause slight eye irritation  
May cause irritation of respiratory tract  
Repeated and/or prolonged exposures may cause lung damage (Silicosis)  
**CONTAINS CRYSTALLINE SILICA (QUARTZ) WHICH MAY CAUSE CANCER**  
Risk of cancer depends on level and duration of exposure

### Potential health effects:

**Eye contact:** May cause slight eye irritation. Signs and symptoms include burning, tearing, redness and swelling.

**Skin contact:** Non-irritating to the skin.

**Inhalation:** Harmful by inhalation. May cause irritation of respiratory tract. Long term exposure to airborne concentrations may cause lung damage.

**Ingestion:** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Routes of exposure:** Skin, Inhalation, Ingestion

**Target Organs:** Lungs

See Sections 11 & 12 for additional toxicological and ecological information

**Environmental hazard:** See Section 12, below

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Hazardous Components

Components	CAS-No	Weight %
Crystalline silica (Quartz)	14808-60-7	< 3%

This product is considered hazardous as defined under OSHA's Hazard Communication Standard (29 CFR 1910.1200).

### 4. FIRST AID MEASURES

**Inhalation:** Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion. If breathing is difficult, give oxygen.

**Skin contact:** Wash off immediately with soap and plenty of water. If a person feels unwell or symptoms of skin irritation appear, consult a physician.

**Eye contact:** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.

**Ingestion:** If swallowed, seek medical advice immediately and show this container or label. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

### 5. FIRE-FIGHTING MEASURES

**Flash Point:** Not applicable

**Autoignition temperature:** Not selfigniting

**Explosive properties:** LEL: 0.07 oz/ft<sup>3</sup>

**Unusual Fire and Explosion Hazards:** Excess dust dispersed in air represents an explosion hazard in the presence of electrical sparks and static discharges .

**Reactivity Hazard:** None known

**Suitable extinguishing media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

**Hazardous combustion products:** Carbon monoxide, Carbon dioxide (CO<sub>2</sub>).

**Special Fire Fighting Procedure:** Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment.

**Environmental precautions:** Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

**Clean-up methods:** Sweep up and shovel into suitable containers for disposal. Clean spill area thoroughly. Local authorities should be advised if significant spillages cannot be contained.

## 7. HANDLING AND STORAGE

**Handling:** Remove all sources of ignition. Avoid contact with skin, eyes and clothing. Avoid breathing mists, dusts, or vapors. Wash hands thoroughly after handling.

**Storage:** Keep containers tightly closed in a cool, well-ventilated place. Keep product and empty container away from heat and sources of ignition.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering measures:** Maintain adequate ventilation to keep hazardous ingredients below their PELs or TLVs. Use NIOSH/MSHA approved respirator whenever exposure limits exceeded.

### Personal Protective Equipment

**Eye protection:** Wear face protection, Safety glasses

**Skin and body protection:** Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place

**Respiratory protection:** In the case of respirable dust and/or fumes, use self-contained breathing apparatus.

**Hand protection:** Protective gloves, Rubber gloves

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice.

### Exposure controls

Components	OSHA STEL	OSHA PEL	OSHA TWA	ACGIH STEL	ACGIH TWA
Crystalline silica (Quartz)		0.1 mg/m <sup>3</sup> (respirable fraction)	0.1 mg/m <sup>3</sup> (respirable fraction)		0.025 mg/m <sup>3</sup> (respirable fraction)

TLV/PEL

**Particles (insoluble or poorly soluble)  
Not Otherwise Specified [PNOS]**

<b>OSHA TWA</b>	15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction)
<b>ACGIH TWA</b>	10 mg/m <sup>3</sup> (inhalable particles) 3 mg/m <sup>3</sup> (respirable particles)

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Powder
<b>Color:</b>	Off-white
<b>Odor:</b>	Odourless
<b>Physical state:</b>	Solid
<b>Solubility:</b>	Water insoluble
<b>Specific Gravity:</b>	1.7
<b>Density:</b>	1.6 g/cm <sup>3</sup>
<b>Flash Point:</b>	Not applicable

## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	Stable at normal conditions
<b>Conditions to avoid:</b>	Heat, flames and sparks
<b>Materials to avoid:</b>	Oxidizing agents
<b>Hazardous decomposition products:</b>	Carbon monoxide, Carbon dioxide (CO <sub>2</sub> )
<b>Possibility of Hazardous Reactions:</b>	Will not occur

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

Components	LC50/inhalation/4h/Rat	LD50/Dermal/Rat	LD50/Oral/Rat
Crystalline silica (Quartz)	No data available	No data available	500 mg/kg

**Product Information:** The data listed, below, is based on this or a similar product:

**LD50/Oral/Rat:** > 8000 mg/kg (rat)

### Local effects

<b>Skin irritation:</b>	Non-irritating to the skin.
<b>Eye irritation:</b>	Contact with eyes may cause irritation.
<b>Inhalation:</b>	May cause irritation of respiratory tract.
<b>Ingestion:</b>	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Chronic toxicity:** Long-term chronic toxicity studies to evaluate the carcinogenic potential of this product have not been conducted; See table and/or data, below, of individual components

Components	NTP	IARC	OSHA
Crystalline silica (Quartz)	Group A - Known to be human carcinogens	Group 1- Carcinogenic to Humans	Present

### Specific effects

**Carcinogenic effects:** Crystalline silica has been reviewed by IARC. IARC working group found sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the form of quartz or cristobalite from occupational sources. There is sufficient evidence in experimental animals for the carcinogenicity of quartz and cristobalite. Therefore, IARC working group has classified Crystalline Silica as carcinogenic to humans (Group 1).

**Target Organs:** Lungs

## **12. ECOLOGICAL INFORMATION**

### Aquatic toxicity:

**Product Information:** The data listed, below, is based on this or a similar product:

**EC50/96hr/48hr/24hr** > 2000 mg/L (Marine invertebrate; 48 hrs)  
> 1000 mg/L (Marine alga; 48 hrs)

**Persistence and degradability:** No data available

### Environmental Fate and Pathways:

**Mobility:** No data available

**Biodegradability:** No data available

**Bioaccumulative potential:** No data available

**Physical / Chemical:** No data available

## **13. DISPOSAL CONSIDERATIONS**

**Waste from residues / unused products:** Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of in accordance with Local and National regulations.

### RCRA Hazardous Waste:

**RCRA:** Not listed

## 14. TRANSPORT INFORMATION

### U.S. Department of Transportation Ground (49 CFR):

Proper shipping name: Not regulated

### International Air Transportation (ICAO/IATA):

Proper shipping name: Not regulated

### International Maritime Organization (IMO/IMDG):

Proper shipping name: Not regulated

### Surface Shipments in Europe (ADR/RID):

Proper shipping name: Not regulated

## 15. REGULATORY INFORMATION

### Heavy metals:

Heavy metals content (ppm): Not applicable

### International Inventories

TSCA/ (USA)	Listed	EINECS/ (EU)	Listed
DSL/ (CANADA)	Listed	NDSL/ (CANADA)	Not applicable
ENCS/ (JAPAN)	Listed	IECSC/ (CHINA)	Listed
PICCS/ (PHILLIPINES)	Listed	KECL (KOREA)	Listed
AICS/ (AUSTRALIA)	Listed	HSNO/ New Zealand:	Listed

### U.S. Regulations

#### TSCA Section 12(b) Export Notification

This product does not contain chemicals that are required to be notified under the TSCA 12(b) Export Notification.

### SARA Title III:

Section 302 EHS: None

Section 311/312: Chronic Health Hazard

Section 313: Not listed

**California Prop. 65:**

This Product contains the following Substance (s) known to the state of California to cause cancer and/or developmental effects.

Components	Carcinogen	Reproductive toxicity	No significant risk level
Crystalline silica (Quartz)	Listed		

**Canada****WHMIS hazard class:**

D2A Possible, probable or known human carcinogen according to classifications by IARC or ACGIH.

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

**16. OTHER INFORMATION****HMIS:**

Health: 1 \*  
 Flammability: 0  
 Reactivity: 0

**Previous Revision Date:** 10-Jul-2001**Key/Legend:**

N/A: Not applicable  
 N/D: Not determined  
 ppm: Parts per million  
 X: Listed

**Prepared by:** Product Stewardship

The data set forth in these sheets are based on information provided by the suppliers of the raw materials and chemicals used in the manufacture of the aforementioned product. ELEMENTIS SPECIALTIES makes no warranty with respect to the accuracy of the information provided by their suppliers, and disclaims all liability of reliance thereon. ELEMENTIS SPECIALTIES warrants only that its products conforms with their published specifications, and no other express warranty is made with regards thereof. We do not guarantee favorable results, and we assume no liability in connection with the use of the products. They are intended for use by persons having technical skill and knowledge, at their own discretion and risk.

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## BENTONE<sup>®</sup> 990

suspension additive

for oil-based drilling fluids

**BENTONE 990** rheological additive is an organophilic amino-attapulgite which controls the settling of solids in oil-based drilling muds and other drilling fluids. **BENTONE 990's** unique rheological structure suspends weighting materials and other solids with less increase in viscosity and gel strength than conventional bentonite or hectorite based organoclays. This allows the formulation of low viscosity muds with undiminished penetration rates and cuttings removal. **BENTONE 990** can be used alone or in combination with conventional organoclay gellants. The solids suspension capacity of a fluid which is already thickened with an organoclay can be increased by the addition of **BENTONE 990**, without substantially increasing the viscosity of the system.

### Applications

Suspending solids in drilling fluids including:

- Oil-based drilling muds
- Invert emulsion muds
- Packer fluids
- Completion fluids
- Workover fluids

Based on:

- diesel oil
- crude oil
- mineral oil
- synthetic

Conditioning mud before storage

Controlling settling in diesel oil without the use of other additives

Reducing the syneresis or separation of oil from fluids stored without agitation.

### Incorporation

**BENTONE 990** disperses readily in oils. As with other insoluble additives, good agitation should be

used when incorporating **BENTONE 990** into the drilling system. The amount of stirring needed will depend on the temperature of the oil, with the rate of suspension control development increasing with increasing temperature, as well as with the level of shear available.

### Attributes

#### BENTONE 990 gellant

- Effectively suspends weighting materials and other solids
- Controls settling with minimal increases in viscosity and gel strength
- Reduces top separation of oil
- Maintains suspension over a wide range of water contents
- Maintains suspension over a wide temperature range
- Increases the suspension of solids in fluids thickened with organoclay gellants
- Has little effect of filtration; this must be controlled separately

### Chemical and Physical Data

Composition - organically modified attapulgite clay

Color - light tan

Form - finely divided powder

Specific gravity - 2.0 g/cm<sup>3</sup>

Bulk density - 0.6 g/cm<sup>3</sup>

Moisture - 5.5% maximum, as shipped

NOTE: The information herein is currently believed to be accurate. We do not guarantee its accuracy. Purchasers shall not rely on statements herein when purchasing any products. Purchasers should make their own investigations to determine if such products are suitable for a particular use. The products discussed are sold without warranty, express or implied, including a warranty of merchantability and fitness for use. Purchases will be subject to a separate agreement which will not incorporate this document.

## Level of Use

The level of **BENTONE® 990** use depends on the degree of solids suspension needed, on whether it is being used alone or in combination with a conventional gellant, and on the type of base oil being used. Pilot trials are recommended to optimize performance before field use.

Typical loadings are:

- 1 - 5 pounds/barrel
- 3 - 15 kg/m

## Base Mud Formulation

80/20 OWR, 14 ppg

Component		Grams
Base Fluid	Isomerized C16/C18 Alpha Olefins	156
Primary Emulsifier	TOFA	10
Secondary Emulsifier	Polyimide	6
Brine	30w % Calcium Chloride Solution	74.5
Lime	Calcium Hydroxide Powder	10
Rheological Additive/Suspension Additive		<b>See Below</b>
Fluid Loss Additive	Amine Treated Ligante	8
Weighting Agent	Barium Sulfate	325

Mixed on a Hamilton Beach/Multimixer with a single sinusoidal blade at Low speed.

## Mud Properties

	<b>BENTONE® 38/5 ppb</b>	<b>BENTONE® 38/5 ppb BENTONE® 990/5 ppb</b>
Primary Rheological Additive		
Suspension Additive		

### Initial Properties

Plastic Viscosity, cp	32	35
Yield Point, lbs/100 sq ft	16	30
Apparent Viscosity, cp	40	50
Fann 35 6/3 rpm	11/10	16/15
Gels, 10sec/10min, 100 lbs/sq ft	11/18	18/22
Brookfield 0.3 rpm, cp	25,200	46,000
Emulsion Stability, V	1135	1290

### 400° F, 16 Hr. Static Aged Properties

Plastic Viscosity, cp	77	73
Yield Point, lbs/100 sq ft	34	34
Apparent Viscosity, cp	94	90
Fann 35 6/3 rpm	10/8	13/11
Gels, 10sec/10min, 100 lbs/sq ft	18/23	16/21
Brookfield 0.3 rpm, cp	13,200	22,000
Emulsion Stability, V	508	705

**Syneresis, mm**

**Appearance**

<b>8</b>	<b>3</b>
<b>medium gel</b>	<b>medium-soft gel</b>

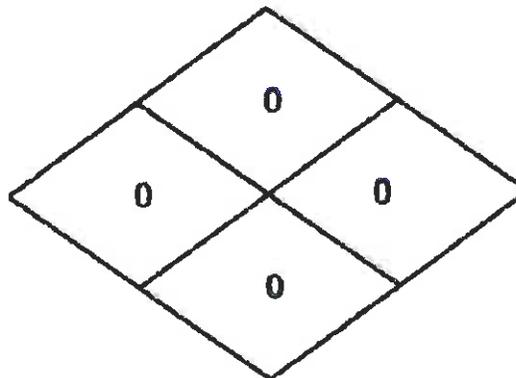
NOTE: The information herein is currently believed to be accurate. We do not guarantee its accuracy. Purchasers shall not rely on statements herein when purchasing any products. Purchasers should make their own investigations to determine if such products are suitable for a particular use. The products discussed are sold without warranty, express or implied, including a warranty of merchantability and fitness for use. Purchases will be subject to a separate agreement which will not incorporate this document.

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78363



## Material Safety Data Sheet

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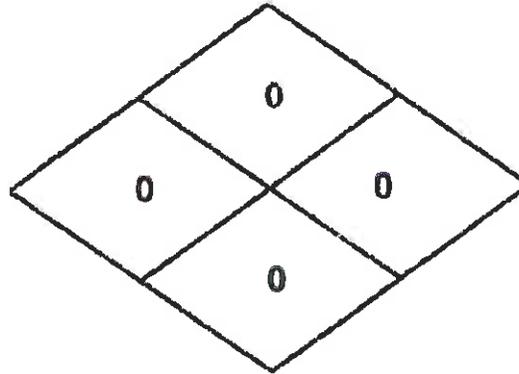
Revised Date	SECTION 1.0 02/11/02
Supersedes	06/18/98
Trade Name	SECTION 2.0 CALCIUM CHLORIDE LIQUID
Synonyms/Other Designations	CALCIUM CHLORIDE, SOLUTION
Chemical Formula	CaCl <sub>2</sub> + H <sub>2</sub> O
Hazard(s)	Irritant
Boiling Point	SECTION 3.0 N/A
Freezing Point	N/A
Specific Gravity	1.39
Vapor Pressure (mm Hg)	N/A
Vapor Density	N/A
Solubility in H <sub>2</sub> O	Complete
Appearance	Clear liquid
Odor	None
Stability	SECTION 4.0 Stable
Incompatibility	Corrodes metals in aqueous solution
Hazardous Decomposition Products	None known
Hazardous Polymerizations	Will not occur
Flash Point	SECTION 5.0 Non Flammable
Extinguishing Media	Water, Dry Chemical, Foam, CO <sub>2</sub>
Special Fire Fighting Procedures	None known
Unusual Fire Hazards	None known
pH	N/A
Inhalation	SECTION 6.0 Move to well ventilated area; if breathing difficulties persist after 15 minutes, seek medical help
Eye Contact	Wash eye thoroughly for 15 minutes; if irritation persists, seek medical help.
Skin Contact	Wash exposed area with soap & water
Ingestion	May cause gastrointestinal discomfort; Administer large amounts of water, induce vomiting, if irritation persists, seek me

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1011 CALCIUM CHLORIDE LIQUID

Material Safety Data Sheet

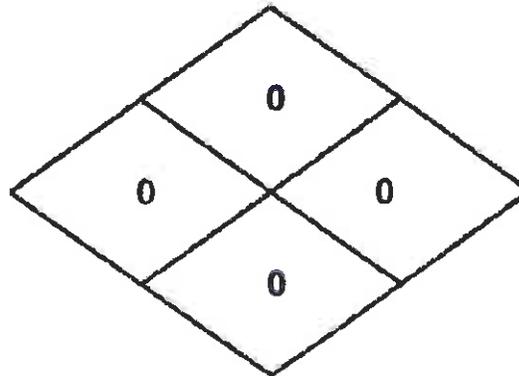
Page 2

Acute	SECTION 7.0 May irritate eyes and skin. Coughing and other breathing difficulties may occur.
Chronic	None known
Accidental Spill Procedures	SECTION 8.0 Not dangerous if spilled. Broom spill area and pump out for reuse or dispose of according to local, state, and federal reg.
Handling & Storage	Observe normal handling and storage procedures
Respiratory Protection	SECTION 9.0 Dust/mist respirator in dust conditions
Ventilation	Desired
Exhaust	Mechanical, Electrostatic
Protective Gloves	Rubber gloves
Eye Protection	Safety Goggles, Goggles
Other Protection	Eye wash/Safety shower
DOT Proper Shipping Name	SECTION 10.0 Calcium Chloride, solution
DOT Hazard Class or Division	Not Hazardous
DOT Identification Number	N/A
DOT Packaging Group	N/A
Type Label(s) Required or Exemption Nu	None
DISCLAIMER	SECTION 11.0 SOME INFORMATION PROVIDED HEREIN WAS DRAWN FROM SOURCES OTHER THAN INTEGRITY INDUSTRIES.
DISCLAIMER	THE INFORMATION PROVIDED HEREIN IS BELIEVED BY INTEGRITY INDUSTRIES TO BE CORRECT AND RELIABLE; NO EXPRESSED OR IMPLIED WARRANTY IS PROVIDED HOWEVER.
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## Material Safety Data Sheet

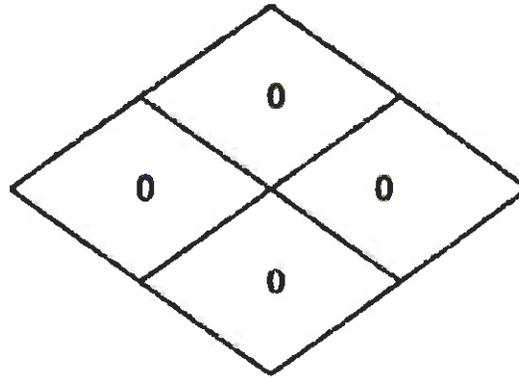
Page 1

Revised Date	02/11/02
Supersedes	09/28/98
Trade Name	CALCIUM CHLORIDE POWDER
Synonyms/Other Designations	CALCIUM CHLORIDE, SOLID
Chemical Formula	CaCl <sub>2</sub>
Hazard(s)	None known
Boiling Point	>1500 F
Freezing Point	N/A
Specific Gravity	2.2
Vapor Pressure (mm Hg)	0.005
Vapor Density	N/A
Solubility in H <sub>2</sub> O	Complete
Appearance	White powder, flakes, pellets
Odor	None
Stability	Stable
Incompatibility	Corrodes metals in aqueous solution
Hazardous Decomposition Products	None known
Hazardous Polymerizations	Will not occur
Flash Point	Non Flammable
Extinguishing Media	Water, Dry Chemical, Foam, CO <sub>2</sub>
Special Fire Fighting Procedures	None known
Unusual Fire Hazards	None known
pH	N/A
Inhalation	Move to well ventilated area; if breathing difficulties persist after 15 minutes, seek medical help
Eye Contact	Wash eye thoroughly for 15 minutes; if irritation persists, seek medical help.
Skin Contact	Wash exposed area with soap & water
Ingestion	May cause gastrointestinal discomfort; Administer large amounts of water. Induce vomiting, if irritation persists, seek me

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1012 CALCIUM CHLORIDE POWDER

Material Safety Data Sheet

Page 2

Acute  
Chronic

SECTION 7.0  
May irritate eyes and skin. Coughing and other breathing difficulties may occur.  
None known

Accidental Spill Procedures  
Handling & Storage

SECTION 8.0  
Not dangerous if spilled; Sweep up for reuse or dispose of according to local, state, and federal regulations.  
Store in dry, well ventilated area.

Respiratory Protection  
Ventilation  
Exhaust  
Protective Gloves  
Eye Protection  
Other Protection

SECTION 9.0  
Dust/mist respirator in dust conditions  
Desired  
Mechanical, Electrostatic  
Rubber gloves  
Safety Glasses, Goggles  
Eye wash/Safety shower

DOT Proper Shipping Name  
DOT Hazard Class or Division  
DOT Identification Number  
DOT Packaging Group  
Type Label(s) Required or Exemption Nu

SECTION 10.0  
Calcium Chloride, solid  
Not Hazardous  
N/A  
N/A  
None

DISCLAIMER

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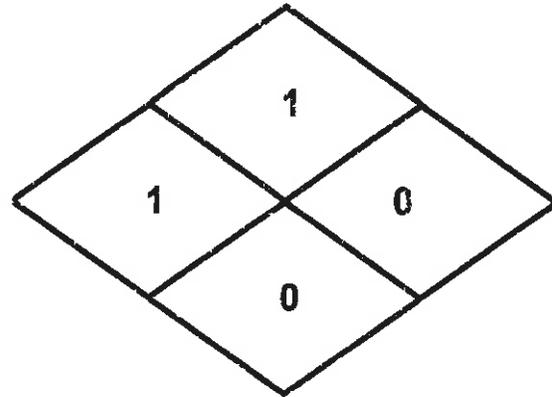
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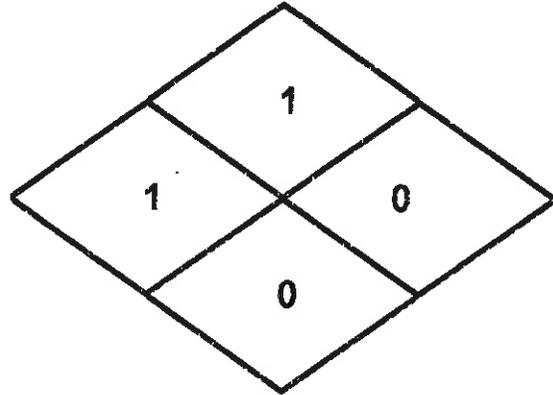
Page 1

Revised Date	SECTION 1.0
Supercedes	New
	08/11/03
Trade Name	SECTION 2.0
Synonyms/Other Designations	Base Fluid AM
Chemical Formula	Synthetic Drilling Fluid Base
Hazard(s)	Synthetic olefin
	Not Hazardous
Boiling Point	SECTION 3.0
Freezing Point	>500 F
Specific Gravity	N/A
Vapor Pressure (mm Hg)	0.775
Vapor Density	N/A
Solubility in H <sub>2</sub> O	N/A
Appearance	Insoluble
Odor	Clear viscous liquid
	Bland
Stability	SECTION 4.0
incompatibility	Stable under normal conditions.
Hazardous Decomposition Products	Highly reactive with oxidizing agents
Hazardous Polymerizations	Combustion may produce oxides of carbon and smoke
	Will not occur
Flash Point	SECTION 5.0
Extinguishing Media	240 F
Special Fire Fighting Procedures	Water, Dry Chemical, Foam, CO <sub>2</sub>
Unusual Fire Hazards	Normal firefighting procedures
pH	None known
	N/A
Inhalation	SECTION 6.0
Eye Contact	Move to well ventilated area; if breathing difficulties persist after 15 minutes, seek medical help
Skin Contact	Wash eye thoroughly for 15 minutes; if irritation persists, seek medical help.
Ingestion	Wash exposed area with soap & water
	Relatively non-toxic via ingestion

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10089 Synthetic Drilling Fluid Base

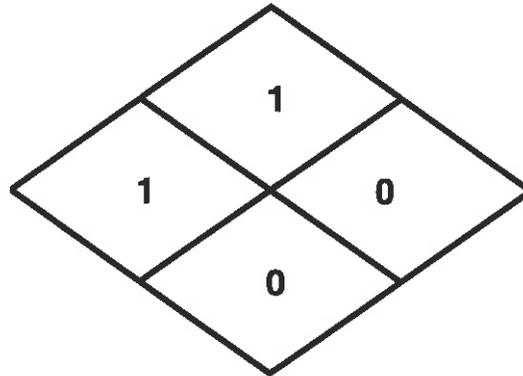
Material Safety Data Sheet

Acute	SECTION 7.0 Non irritating
Chronic	If sprayed or misted, may cause chemical pneumonitis. Prolong or repeated contact with skin may cause irritation
Accidental Spill Procedures Handling & Storage	SECTION 8.0 Absorb with inert material and dispose of according to local, state, and federal regulations. Store in well ventilated area.
Respiratory Protection	SECTION 9.0 NIOSH approved organic respirator in mist conditions
Ventilation	Desired
Exhaust	Mechanical
Protective Gloves	Rubber gloves
Eye Protection	Safety Glasses, Goggles
Other Protection	Eye wash/Safety shower
DOT Proper Shipping Name	SECTION 10.0 Not Regulated
DOT Hazard Class or Division	Not Hazardous
DOT Identification Number	N/A
DOT Packaging Group	N/A
Type Label(s) Required or Exemption Nu	None
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## Material Safety Data Sheet

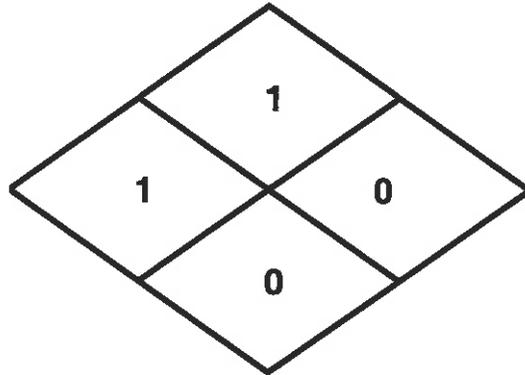
Page 1

Revised Date	SECTION 1.0 12/08/2007
Supersedes	02/08/2002
Trade Name	SECTION 2.0 SYNVERT Drilling Fluid
Synonyms/Other Designations	MINERAL OIL BASED MUD
Chemical Formula	Oil based drilling fluid
Hazard(s)	Not hazardous
Boiling Point	SECTION 3.0 IBP > 450
Freezing Point	N/A
Specific Gravity	Varies with mixture (weightable)
Vapor Pressure (mm Hg)	< 1 mm Hg @ 68 F (< 0.00083 PSIA @ 68 F)
Vapor Density	N/A
Solubility in H <sub>2</sub> O	Insoluble
Appearance	Brown/grey/black liquid
Odor	mild
Stability	SECTION 4.0 Stable
Incompatibility	High heat, sparks, open flames
Hazardous Decomposition Products	Combustion may produce smoke and carbon oxides
Hazardous Polymerizations	Will not occur
Flash Point	SECTION 5.0 >200 F
Extinguishing Media	Water, Dry Chemical, Foam, CO <sub>2</sub>
Special Fire Fighting Procedures	Normal firefighting procedures
Unusual Fire Hazards	Remove containers from source of heat.
pH	N/A
Inhalation	SECTION 6.0 Move to well ventilated area; if breathing difficulties persist after 15 minutes, seek medical help
Eye Contact	Wash eye thoroughly for 15 minutes; if irritation persists, seek medical help.
Skin Contact	Wash exposed area with soap & water; if irritation persists, seek medical help.
Ingestion	Do not induce vomiting; seek medical assistance

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**998 SYNVERT (Drilling Fluid)**

**Material Safety Data Sheet**

	<b>SECTION 7.0</b>
Acute	No data available
Chronic	None known to occur.
	<b>SECTION 8.0</b>
Accidental Spill Procedures	Berm spill area and pump out for reuse. Absorb residue with inert material and dispose of according to local, state, and federal regulations.
Handling & Storage	Observe normal handling and storage procedures
	<b>SECTION 9.0</b>
Respiratory Protection	NIOSH approved organic vapor filter respirator in confined areas
Ventilation	Desired
Exhaust	Mechanical
Protective Gloves	Rubber gloves
Eye Protection	Safety Glasses, Goggles, face shield
Other Protection	Eye wash/Safety shower
	<b>SECTION. 10.0</b>
DOT Proper Shipping Name	Not regulated by DOT
DOT Hazard Class or Division	Not regulated
DOT Identification Number	Not applicable
DOT Packaging Group	Not applicable
Type Label(s) Required or Exemption Nu	Not required by DOT For Limited Quantity requirement see DOT Regulation 49 CFR.
	<b>SECTION. 11.0</b>
DISCLAIMER	SOME INFORMATION PROVIDED HEREIN WAS DRAWN FROM SOURCES OTHER THAN INTEGRITY INDUSTRIES.
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HY 40

Date of Preparation: May 17, 2012

**Section 1 - Chemical Product and Company Identification**

**Product Name:** HY 40  
**Chemical Name:** Hydrotreated Light Mineral Oil  
**Chemical Family:** Petroleum oils  
**Chemical Formula:** Not Applicable  
**CAS Number:** 64742-46-7  
**Other Designations:** Contains Oil  
**Manufacturer:** Ergon Refining, Inc., P.O. Box 309, Vicksburg, MS 39181  
**Company Contact:** Will Poe, Phone (601) 630-8319

**EMERGENCY TELEPHONE NUMBERS:**  
 Ergon Refining, Inc. (601) 638-4960 Normal Business Hours  
 Chemtrec (800) 424-9300 After Business Hours

**Section 2 - Composition / Information on Ingredients**

A complex combination of hydrocarbons obtained by treating a petroleum fraction with hydrogen in the presence of a catalyst. It consists of hydrocarbons having carbon numbers predominantly in the range of C11 through C25 and produces a finished oil with a viscosity near 37 SUS @ 100°F (3.0 cSt@40°C).

Ingredient Name	CAS Number	% vol
Hydrotreated Light Mineral Oil	64742-46-7	100.0

**Trace Impurities:**

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH IDLH
	TWA	STEL	TWA	STEL	TWA	STEL	
Hydrotreated Light Mineral Oil	5 mg/m <sup>3</sup> (oil mist)	none estab.	5 mg/m <sup>3</sup> (oil mist)	10 mg/m <sup>3</sup> (oil mist)	none estab.	none estab.	none estab.

**Section 3 - Hazards Identification**

☆☆☆☆☆ **Emergency Overview** ☆☆☆☆☆  
 Not Expected to cause a severe emergency hazard.

**HMIS**  
**H** 1  
**F** 1  
**R** 0  
**PPE† B**  
 †Sec. 8

**Potential Health Effects**

**Primary Entry Routes:** Skin  
**Inhalation:** Inhalation of vapors or mist may be irritating to respiratory passages. Target Organ for mineral oil mist is lungs. Prolonged exposure may result in dizziness and nausea.  
**Eye:** Eye contact may result in slight irritation and redness.  
**Skin:** Short term contact with skin is unlikely to cause any problems; excessive or prolonged and repeated contact and poor hygiene conditions may result in dryness, dermatitis, erythema, oil acne, cracking and defatting of the skin.  
**Ingestion:** May result in nausea or stomach discomfort.  
**Medical Conditions Aggravated by Long-Term Exposure:** Personnel with pre-existing skin disorders should avoid contact with this product.

**Section 4 - First Aid Measures**

**Eye Contact:** Wash with water. If irritation or redness persists seek medical help.  
**Skin Contact:** Wash thoroughly with soap and water. Remove contaminated clothing. Reuse only after cleaning.  
**Inhalation:** Remove to fresh air. Assist breathing if necessary. Seek medical help.  
**Aspiration:** If there is any suspicion of aspiration into the lungs obtain medical advice.  
**Ingestion:** If swallowed, observe for signs of stomach discomfort or nausea. If symptoms persist, seek medical help. Do not induce vomiting.

### Section 5 - Fire-Fighting Measures

**Flash Point:**  $\geq 200$  °F (93 °C)

**Flash Point Method:** COC

**Burning Rate:** Not available

**Autoignition Temperature:** Not determined

**Lower Explosive Level (LEL):** Not determined

**Upper Explosive Limit (UEL):** Not determined

**Flammability Classification:** OSHA Class III-B Combustible Liquid

**Extinguishing Media:** Halon, dry chemical, foam, CO<sub>2</sub> and water mist or fog. Water may be used to cool below flash point.

**Unusual Fire or Explosion Hazards:** Do not use forced stream as this could cause fire to spread.

**Combustion Products:** Fumes, smoke and carbon monoxide.

**Fire-Fighting Instructions and Equipment:** Use water to cool containers exposed to flames. Do not enter enclosed or a confined work space without proper protective equipment. Fire fighting personnel should wear respiratory protection (positive pressure if available).



### Section 6 - Accidental Release Measures

**Spill /Leak Procedures:** Stop spill at source if possible without risk. Contain spill. Eliminate sources of ignition. Spill area will be slick. Recover all possible material for reclamation. Use non-flammable absorbent material to pick up remainder of spill.

**Spill to Navigable Waters:** If this material is spilled into navigable waters and creates a visible sheen, it is reportable to the National Response Center.

### Section 7 - Handling and Storage

**Handling and Storage Precautions:** Keep away from flames, sparks or hot surfaces. Never use a torch to cut or weld on or near container. Empty oil containers can contain explosive vapors. NFPA Class IIIB storage. Wash thoroughly after handling.

**Work / Hygienic Practices:** Wash hands with soap and water before eating, drinking, smoking or use of toilet facilities. Do not use gasoline, solvents, kerosene, or harsh abrasive skin cleaners for washing exposed skin areas. Take a shower after work if general contact occurs. Remove oil-soaked clothing and launder before reuse. Discard contaminated shoes and leather gloves.

**Shelf Life:** Product should be stored in clean, dry containers at ambient temperatures and it should remain stable with exception of slight color stability loss unless it is contaminated.

### Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:** Adequate ventilation is required where excessive heating or agitation may occur to maintain concentration below exposure limits.

**Eye / Face Protection:** Safety glasses or face shield where splashing is possible.

**Skin Protection:** As needed to prevent repeated skin contact. Solvent resistant gloves should be used if needed.

**Respiratory Protection:** Not Normally Needed. Respirator should be used in areas where vapor concentrations are excessive due to high temperatures or where oil misting occurs.

### Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** Clear & bright

**Color:** Water white

**Odor:** Mild Petroleum Odor

**Odor Threshold:** Not determined

**Vapor Pressure:** Not applicable

**Vapor Density (Air=1):**  $> 5$

**Specific Gravity (H<sub>2</sub>O=1):** 0.87

**Water Solubility:** Nil

**Boiling Point:**  $> 415$ °F (212°C)

**Pour Point:** -96°F (-71 °C)

**% Volatile:** Not determined

**Evaporation Rate:** Not available

**pH:** Not applicable

**Section 10 - Stability and Reactivity**

**Stability:** Stable  
**Polymerization:** Polymerization will not occur.  
**Chemical Incompatibilities:** Strong Oxidizers.  
**Conditions to Avoid (Stability):** Sources of ignition.  
**Hazardous Decomposition Products:** Combustion products include carbon dioxide and carbon monoxide.

**Section 11- Toxicological Information**

**Acute Toxicity:** Tests on similar materials show a low order of acute oral and dermal toxicity.  
**Acute Oral Effects:** Tests on similar materials indicate low order of acute oral toxicity.  
**Acute Inhalation Effects:** Low acute toxicity expected on inhalation.  
**Eye Irritation:** Minimal irritation on contact. Eye irritation slight or practically non-irritating based on similar products.  
**Skin Effects:** Practically non-toxic if absorbed.  
**Skin Irritation:** May cause mild irritation with prolonged and repeated exposure.  
**Skin Sensitization:** Skin sensitization is indicated as non-sensitizing based on data from similar products.

This product is severely hydrotreated at greater than 800 psi, and does not require a cancer warning under OSHA Hazard Communication Standard (29 CFR 1910.1200). Similar products have not been listed in NTP reports, and are classified by IARC as having inadequate evidence of carcinogenicity. IARC indicates that based on preponderance of data highly refined mineral oils are not mutagenic either *in vitro* or *in vivo*. Severely hydrotreated naphthenic petroleum oils have not been found to be carcinogenic or potential carcinogens.

**Section 12 - Ecological Information**

**Aquatic Release:** Advise authorities if product has entered or may enter watercourses or sewer drains.  
**Ecotoxicity:** Available data indicate this product is not acutely toxic.  
**Biodegradability:** No information available.

**Section 13 - Disposal Considerations**

Follow Federal, State, and Local regulations. Not a RCRA hazardous waste if uncontaminated. If "used", RCRA criteria must be determined. Do not flush to drain / storm sewer. Contract to authorized disposal service. If permitted incineration may be practical. Consider recycling.

**Section 14 - Transport Information**

**Proper Shipping Name:** Not regulated by DOT (Contains Oil)  
**Hazard Class:** Not Applicable  
**DOT ID No.:** Not Applicable  
**DOT Shipping Label:** Not regulated by DOT

**Section 15 - Regulatory Information**

**U.S. Federal Regulatory Information:**

**CERCLA / SARA**

302/303/304 Categories:	Extremely Hazardous Substances	No
	(40 CFR 355 Appendix A)	
311/312 Categories:	Immediate (Acute) Health Effects	No
	(40 CFR 370)	
	Delayed (Chronic) Health Effects	No
	Fire Hazard	No
	Sudden Release of Pressure Hazard	No
	Reactivity Hazard	No
313 Categories:	Toxic Chemicals (40 CFR 372)	No

Clean Air Act:	Hazardous Air Pollutants (HAPS)	No
	Ozone Depleting Compounds (ODC)	No
Clean Water Act: (40 CFR 116; 401.15)	If spilled into navigable waters it is reportable to National Response Center, 800-424-8802	
OSHA (29 CFR 1910): 1910.1200	Reportable Quantity = Oil Sheen present on navigable water surface	
RCRA (40 CFR 261.33)	This product is not hazardous under Hazard Communication Standard 29 CFR	
	This product does not meet hazardous waste criteria.	
EPA/TSCA Inventory:	The components of this product are listed on the EPA/TSCA inventory of chemicals. CAS No. 64742-46-7	

**Other Regulations:**

WHMIS (Canada)	Not listed on the Canadian Controlled Product Ingredient Disclosure and is compliant with Controlled Products Regulation
----------------	--

**Section 16 - Other Information**

**NFPA Hazard Rating**

- Health	1 Slight
- Fire	1 Slight
- Reactivity	0 Least

**Prepared By:** Will Poe      **Phone:** (601) 630-8319

<b>Supersedes MSDS Dated:</b>	November 30, 2011	Date Changed
	June 10, 2011	Product name slightly altered dropping DF

This MSDS complies with OSHA Hazard Communication Standard (HCS) 29 CFR 1910.1200 and conforms to ANSI Z 400.1 16-Section Format.

**Disclaimer:** Ergon Refining, Inc. believes this information is accurate but not all-inclusive in all circumstances. It is the responsibility of the user to determine suitability of the material for their purposes. No warranty, expressed or implied, is given.

## Material Safety Data Sheet

# Lime

HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

### 1. Product and Company Identification

<b>Material name</b>	Lime
<b>Patent Number</b>	Not available
<b>Revision date</b>	March-22-2011
<b>Version No.</b>	4
<b>CAS #</b>	1305-62-0
<b>Manufacturer information</b>	INTEGRITY INDUSTRIES INC.
<b>Supplier information</b>	INTEGRITY INDUSTRIES INC. P O BOX 5342 Kingsville, TX 78363
<b>Supplier emergency telephone number(s)</b>	CHEMTREC 1-800-424-9300/361-595-5561

### 2. Hazards Identification

<b>Emergency overview</b>	DANGER  AVOID CREATING DUST. Causes skin and eye burns. Irritating to eyes, respiratory system and skin. Risk of serious damage to eyes. Prolonged exposure may cause chronic effects. This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>OSHA regulatory status</b>	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
<b>Potential health effects</b>	
<b>Eyes</b>	Do not get this material in contact with eyes. Can cause severe eye irritation. Dust or powder may irritate eye tissue.
<b>Skin</b>	Avoid contact with the skin. Contact with skin may cause irritation.
<b>Inhalation</b>	Do not breathe dust. Dusts of this product may cause irritation of the nose, throat, and respiratory tract.
<b>Ingestion</b>	Do not ingest. May cause stomach distress, nausea or vomiting.
<b>Target organs</b>	Eyes. Lungs. Respiratory system. Skin.
<b>Potential environmental effects</b>	May cause long-term adverse effects in the environment.

### 3. Composition / Information on Ingredients

Components	CAS #	Percent
Calcium hydroxide	1305-62-0	90 - 100

#### 4. First Aid Measures

##### First aid procedures

<b>Eye contact</b>	Flush eyes immediately with large amounts of water. Get medical attention immediately.
<b>Skin contact</b>	Immediately flush skin with plenty of water. Get medical attention if irritation develops or persists. Remove and isolate contaminated clothing and shoes.
<b>Inhalation</b>	Move to fresh air. Oxygen or artificial respiration if needed. If symptoms persist, get medical attention.
<b>Ingestion</b>	Get medical attention immediately. Have victim rinse mouth thoroughly with water. Drink 1 or 2 glasses of water. Never give anything by mouth to a victim who is unconscious or is having convulsions.
<b>General advice</b>	If you feel unwell, seek medical advice (show the label where possible).

#### 5. Fire Fighting Measures

<b>Flammable properties</b>	Not a fire hazard. The product is not flammable.
<b>Extinguishing media</b>	
<b>Suitable extinguishing media</b>	Water.
<b>Protection of firefighters</b>	
<b>Protective equipment and precautions for firefighters</b>	Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

#### 6. Accidental Release Measures

<b>Personal precautions</b>	Local authorities should be advised if significant spillages cannot be contained. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unnecessary personnel away. Stay upwind. Keep out of low areas. Avoid inhalation of dust from the spilled material. Wear a dust mask if dust is generated above exposure limits.
<b>Environmental precautions</b>	Prevent further leakage or spillage if safe to do so.
<b>Methods for containment</b>	Prevent entry into waterways, sewers, basements or confined areas. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product.
<b>Methods for cleaning up</b>	Should not be released into the environment. Sweep up or gather material and place in appropriate container for disposal. Avoid dust formation. After removal flush contaminated area thoroughly with water. Collect dust or particulates using a vacuum cleaner with a HEPA filter.

#### 7. Handling and Storage

<b>Handling</b>	Avoid dust formation. Do not breathe dust. Do not get this material in contact with skin or eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid release to the environment. Handle and open container with care. Wash thoroughly after handling. Avoid prolonged exposure. Provide appropriate exhaust ventilation at places where dust is formed.
<b>Storage</b>	Keep container tightly closed. Keep in a cool place. Keep in a well-ventilated place. Use care in handling/storage. Guard against dust accumulation of this material. Protect from moisture.

## 8. Exposure Controls / Personal Protection

### Exposure limits

#### ACGIH

Material	CAS #	TWA	STEL	Ceiling
Lime	1305-62-0	5 mg/m3	Not established	Not established

#### Components

Calcium hydroxide	1305-62-0	5 mg/m3	Not established	Not established
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#### OSHA

Material	CAS #	TWA	STEL	Ceiling
Lime	1305-62-0	15 mg/m3	Not established	Not established

#### Components

Calcium hydroxide	1305-62-0	15 mg/m3	Not established	Not established
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### Engineering controls

Ensure adequate ventilation, especially in confined areas. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower nearby.

### Personal protective equipment

#### Eye / face protection

Avoid contact with eyes. Wear dust goggles.

#### Skin protection

Wear appropriate chemical resistant gloves. Avoid contact with the skin.

#### Respiratory protection

Wear respirator with dust filter. Use a particulate filter respirator for particulate concentrations exceeding the Occupational Exposure Limit.

#### General hygiene considerations

Do not breathe dust. Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical & Chemical Properties

<b>Appearance</b>	Crystalline or Powder.
<b>Color</b>	White
<b>Odor</b>	Odorless.
<b>Odor threshold</b>	Not available
<b>Physical state</b>	Solid.
<b>Form</b>	Solid
<b>pH</b>	12.4
<b>Melting point</b>	1076 °F (580 °C)
<b>Freezing point</b>	Not available
<b>Boiling point</b>	5162 °F (2850 °C) estimated

<b>Flash point</b>	no data
<b>Evaporation rate</b>	Not available
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available
<b>Flammability limits in air, lower, % by volume</b>	Not available
<b>Vapor pressure</b>	Not available
<b>Vapor density</b>	Not available
<b>Specific gravity</b>	2.08 - 2.34 @ 68 F
<b>Relative density</b>	2.2098 g/cm3
<b>Solubility (water)</b>	1.85 g/L @ 0 C
<b>Partition coefficient (n-octanol/water)</b>	Not available
<b>Auto-ignition temperature</b>	Not available
<b>Decomposition temperature</b>	Not available
<b>Bulk density</b>	0.2 - 0.8 g/cm3 at 20°C

### 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	Stable at normal conditions.
<b>Conditions to avoid</b>	Reacts violently with acids. This product may react with oxidizing agents. Do not mix with other chemicals.
<b>Incompatible materials</b>	Acids. Maleic anhydride. Nitroethane. Nitromethane. Nitroparaffins. Nitropropane. Oxidizing agents.

### 11. Toxicological Information

<b>Acute effects</b>	Acute LD50: 7340 mg/kg estimated, Rat, Oral
<b>Component analysis - LD50</b>	
<b>Toxicology Data - Selected LD50s and LC50s</b>	
Calcium hydroxide	1305-62-0 Oral LD50 Rat: 7340 mg/kg
<b>Sensitization</b>	Not expected to be hazardous by OSHA criteria.
<b>Chronic effects</b>	Prolonged or repeated exposure may cause lung injury.
<b>Carcinogenicity</b>	Not expected to be hazardous by OSHA criteria.
<b>Neurological effects</b>	Not expected to be hazardous by OSHA criteria.

### 12. Ecological Information

<b>Ecotoxicity</b>	LC50 160 mg/L estimated, Fish, 96.00 Hours, Components of this product have been identified as having potential environmental concerns.	
<b>Ecotoxicity - Freshwater Fish Species Data</b>		
Calcium hydroxide	1305-62-0	96 Hr LC50 Gambusia affinis: 160 mg/L [static]
<b>Environmental effects</b>		
<b>Ecotoxicity - Freshwater Fish Species Data</b>		
Calcium hydroxide	1305-62-0	96 Hr LC50 Gambusia affinis: 160 mg/L [static]



### 13. Disposal Considerations

**Disposal instructions** Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

### 14. Transport Information

**Department of Transportation (DOT) Requirements**

Not regulated as hazardous goods.

**Department of Transportation (DOT) Requirements**

Not regulated as dangerous goods.

**Canadian Transportation of Dangerous Goods (TDG) Requirements**

Not regulated as hazardous goods.

**IMDG**

Not regulated as hazardous goods.

**IATA**

Not regulated as hazardous goods.

### 15. Regulatory Information

**Labelling**

**Contains** Calcium hydroxide

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.  
All components are on the U.S. EPA TSCA Inventory List.

**U.S. - FDA - Food Additives Generally Recognized as Safe (GRAS)**

Calcium hydroxide 1305-62-0 21 CFR 184.1205

**Occupational Safety and Health Administration (OSHA)**

**29 CFR 1910.1200 hazardous chemical** Yes

**CERCLA (Superfund) reportable quantity**

None

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories** Immediate Hazard - Yes  
Delayed Hazard - Yes  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No

**Section 302 extremely hazardous substance** No

**Section 311 hazardous chemical** Yes

### Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

### International regulations

#### Canada - WHMIS - Ingredient Disclosure List

Calcium hydroxide 1305-62-0 1 %

### State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

#### U.S. - Massachusetts - Right To Know List

Calcium hydroxide 1305-62-0 Present

#### U.S. - Minnesota - Hazardous Substance List

Calcium hydroxide 1305-62-0 Present

#### U.S. - New Jersey - Right to Know Hazardous Substance List

Calcium hydroxide 1305-62-0 sn 0322

#### U.S. - Pennsylvania - RTK (Right to Know) List

Calcium hydroxide 1305-62-0 Present

#### U.S. - Rhode Island - Hazardous Substance List

Calcium hydroxide 1305-62-0 Toxic

#### U.S. - Texas - Effects Screening Levels - Long Term

Calcium hydroxide 1305-62-0 5 µg/m3 ESL

#### U.S. - Texas - Effects Screening Levels - Short Term

Calcium hydroxide 1305-62-0 50 µg/m3 ESL

## 16. Other Information

### HMIS® ratings

Health: 3  
Flammability: 0  
Physical hazard: 0

### NFPA ratings

Health: 3  
Flammability: 0  
Instability: 0

### Prepared by

Product Stewardship  
515 Post Oak Blvd  
Houston, TX 77027  
+1-713-968-2306



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**Disclaimer**

THIS PRODUCT'S HEALTH AND SAFETY INFORMATION IS PROVIDED TO ASSIST OUR CUSTOMERS IN ASSESSING COMPLIANCE WITH HEALTH, SAFETY AND ENVIRONMENTAL REGULATIONS. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US, AND IS BELIEVED TO BE ACCURATE, ALTHOUGH NO GUARANTEE OR WARRANTY IS PROVIDED OR IMPLIED BY THE COMPANY IN THIS RESPECT. SINCE THE USE OF THIS PRODUCT IS WITHIN THE EXCLUSIVE CONTROL OF THE USER, IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE CONDITIONS OF SAFE USE. SUCH CONDITIONS MUST COMPLY WITH ALL GOVERNMENTAL REGULATIONS.

**Issue date**

March-22-2011

**MSDS sections updated**

Product and Company Identification: Alternate Trade Names



# Material Safety Data Sheet

MSDS ID NO.: 0291MAR019  
Revision date: 02/10/2007

## 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; No. 2 Diesel, Tax Exempt-Motor Vehicle Use, Dyed; ULSD No. 2 Diesel Dyed 15 ppm Sulfur Max; No. 2 MV 15 Diesel Dyed.  
**Chemical Family:** Petroleum Hydrocarbon  
**Formula:** Mixture

**Manufacturer:**  
Marathon Petroleum Company LLC  
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.

### 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			
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**

NO. 2 DIESEL IS A RED COLORED LIQUID. THIS PRODUCT IS CONSIDERED TO BE A COMBUSTIBLE LIQUID PER THE OSHA HAZARD COMMUNICATION STANDARD AND SHOULD BE KEPT AWAY FROM HEAT, FLAME AND SOURCES OF IGNITION. NEVER SIPHON THIS PRODUCT BY MOUTH. IF SWALLOWED, THIS PRODUCT MAY GET SUCKED INTO THE LUNGS (ASPIRATED) AND CAUSE LUNG DAMAGE OR EVEN DEATH. PROLONGED OR REPEATED SKIN CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN WHICH MAY PRODUCE SEVERE IRRITATION OR DERMATITIS.

**OSHA WARNING LABEL:**

**WARNING.  
COMBUSTIBLE LIQUID.**

**ASPIRATION (INADVERTENT SUCTION) OF LIQUID INTO THE LUNGS CAN PRODUCE CHEMICAL PNEUMONIA OR EVEN DEATH.  
PRODUCES SKIN IRRITATION UPON PROLONGED OR REPEATED CONTACT.**

**CONSUMER WARNING LABEL:**

**A CONSUMER WARNING LABEL IS NOT APPLICABLE FOR THIS PRODUCT.**

- Inhalation:** Exposure to high vapor concentrations may produce headache, giddiness, vertigo, and anesthetic stupor.
- Ingestion:** Ingestion may result in nausea, vomiting, diarrhea and restlessness. Aspiration (inadvertent suction) of liquid into the lungs must be avoided as even small quantities in the lungs can produce chemical pneumonitis, pulmonary edema/hemorrhage and even death.
- Skin contact:** Prolonged and repeated liquid contact can cause defatting and drying of the skin and can lead to irritation and/or dermatitis.
- Eye contact:** Produces little or no irritation on direct contact with the eye.

**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		A3 - Confirmed animal carcinogen with unknown relevance to humans (as total hydrocarbons)	

**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.

**Component Information:**

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Naphthalene 91-20-3	Monograph 82, 2002	Reasonably Anticipated To Be A Carcinogen Listed	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 could be a possible human carcinogen.

### FIRST AID MEASURES

**Inhalation:** If affected, move person to fresh air. If breathing is difficult, administer oxygen. If not breathing or if no heartbeat, give artificial respiration or cardiopulmonary resuscitation (CPR). Immediately call a physician. If symptoms or irritation occur with any exposure, call a physician.

**Skin contact:** Wash with soap and large amounts of water. Remove contaminated clothing. If symptoms or irritation occur, call a physician.

**Ingestion:** If swallowed, do not induce vomiting and do not give liquids. Immediately call a physician.

**Eye contact:** Flush eyes with large amounts of tepid water for at least 15 minutes. If symptoms or irritation occur, call a physician.

**Medical conditions aggravated by exposure:** Pre-existing skin conditions and respiratory disorders may be aggravated by exposures to components of this product.

### 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 (AFFT/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  
**Flammable limits in air - upper (%):** 5.0

**NFPA rating:**  
 Health: 1  
 Flammability: 2

**HMIS classification:**  
 Health: 1  
 Flammability: 2

Reactivity: 1  
Other: -

Reactivity: 1  
Special: \*See Section 8 for guidance in selection of personal protective equipment.

## 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 substance has entered a watercourse 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 protection factor criteria cited in ANSI Z88.2. 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

<b>Appearance:</b>	Red Liquid
<b>Physical state (Solid/Liquid/Gas):</b>	Liquid
<b>Substance type (Pure/Mixture):</b>	Mixture
<b>Color:</b>	Red
<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.

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

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**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

**IX. 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.

**X. 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

Lifetime skin painting studies in animals with similar distillate fuels have produced weak to moderate carcinogenic activity following prolonged and repeated exposure. Similar middle distillates, when tested at nonirritating dose levels, did not show any significant carcinogenic activity indicating that this tumorigenic response is likely related to chronic irritation and not to dose. Repeated dermal application has produced severe irritation and systemic toxicity in subacute toxicity studies. Some components of this product, have been shown to produce a species specific, sex hormonal dependent kidney lesion in male rats from repeated oral or inhalation exposure. Subsequent research has shown that the kidney damage develops via the formation of a alpha-2μ-globulin, a mechanism unique to the male rat. Humans do not form alpha-2μ-globulin, therefore, the kidney effects resulting from this mechanism are not relevant in humans. Some components of this product were found to be positive in a few mutagenicity tests while negative in the majority of others. The exact relationship between these results and human health is not known.

#### Summary of health effect data on distillate fuel components:

This product may contain >0.1% naphthalene. Exposure to naphthalene at 30 ppm for two years caused lung tumors in female mice. Male mice with the same exposure did not develop tumors. Exposure to 10-60 ppm naphthalene for 2 years caused tumors in the tissue lining of the nose and respiratory tract in male and female rats. Oral administration of 133-267 mg/kg/day of naphthalene in mice for up to 90 days did not produce mortality, systemic toxicity, adversely affect organ or body weight or produce changes in blood. Repeated oral administration of naphthalene produced an anemia in dogs. Repeated intraperitoneal doses of naphthalene produced lung damage in mice. Repeated high doses of naphthalene has caused the formation of cataracts and retinotoxicity in the eyes of rats and rabbits due to accumulation of 1,2-naphthoquinone, a toxic metabolite. Effects in human eyes is uncertain and not well documented. Pregnant rats administered intraperitoneal doses of naphthalene during gestation gave birth to offspring that had delayed heart and bone development. Pregnant mice given near lethal doses of naphthalene showed no significant maternal toxicity and a reduction in the number of pups per litter, but no gross abnormalities in offspring. Suppressed spermatogenesis and progeny development have been reported in mice, rats and guinea pigs after exposure to high concentrations of naphthalene in their drinking water. Certain groups or individuals, i.e., infants, Semites, Arabs, Asians and Blacks, with a certain blood enzyme deficiency (glucose-6-phosphate dehydrogenase) are particularly susceptible to hemolytic agents and can rapidly develop hemolytic anemia and systemic poisoning from ingestion or inhalation of naphthalene.

#### Summary of health effect information on diesel engine exhaust:

Chronic inhalation studies of whole diesel engine exhaust in mice and rats produced a significant increase in lung tumors. Combustion of kerosene 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.

## 2. ECOLOGICAL INFORMATION

#### Ecotoxicity effects:

Product can cause fouling of shoreline and may be harmful to aquatic life in low concentrations. The 96 hour LL50 values for an accommodated fraction (WAF) of fuel oil ranged from 3.2 to 65 mg/l in fish and 2-210 mg/l in invertebrates. EL50 values for inhibition of algal growth ranged from 1.8 to 2.9 mg/l for No. 2 fuel oil and from 10 to 78 mg/l for diesel fuel. This product does not concentrate or accumulate in the food chain. If released to soil and water, this product is expected to biodegrade under both aerobic and anaerobic conditions.

## 3. 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.

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

**TDG (Canada):**  
**Proper shipping name:** Fuel Oil, No. 2  
**UN/Identification No:** NA 1993  
**Hazard Class:** 3  
**Packing group:** III  
**Regulated substances:** Not applicable.

**15 REGULATORY INFORMATION**

**Federal Regulatory Information:**

**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	= 0.454 kg final RQ = 1 lb final RQ = 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.
- 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**

MSDS ID NO.: 0291MAR019

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

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  
 California Proposition 65: Listed  
 New Jersey Right-To-Know: Listed  
 Pennsylvania Right-To-Know: Listed  
 Massachusetts Right-To Know: Listed  
 Florida substance List: Not Listed.  
 Rhode Island Right-To-Know: 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: Listed  
 Illinois - Toxic Air Contaminants Listed  
 New York - Reporting of Releases Part 597 - List of Hazardous Substances: Listed

**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 %

**16 OTHER INFORMATION**

**Additional Information:** No data available.

**Prepared by:** Craig M. Parker Manager, Toxicology and Product Safety

The information and recommendations contained herein are based upon tests believed to be reliable. However, Marathon Petroleum Company LLC (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**



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## Safety Data Sheet

# OIL BASED MUD

### 1. Identification

<b>Product identifier</b>	<b>OIL BASED MUD</b>	
<b>Other means of identification</b>	Not available.	
<b>Recommended use</b>	Not available.	
<b>Recommended restrictions</b>	None known.	
<b>Manufacturer/Importer/Supplier/Distributor information</b>		
<b>Manufacturer</b>		
<b>Company name</b>	INTEGRITY INDUSTRIES INC.	
<b>Address</b>	2710 E. Corral Ave. Kingsville, Texas 78363 United States	
<b>Telephone</b>	<b>Main Phone</b>	361-595-5561
<b>E-mail</b>	Not available.	
<b>Emergency phone number</b>	Not available.	
<b>Supplier information</b>	INTEGRITY INDUSTRIES INC. 2710 E. Corral Ave. Kingsville, TX 78363	
<b>Supplier emergency telephone number(s)</b>	CHEMTREC 1-800-424-9300	

### 2. Hazard(s) identification

<b>Physical hazards</b>	Flammable liquids	Category 3
<b>Health hazards</b>	Acute toxicity, oral	Category 4
	Acute toxicity, dermal	Category 4
	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2
	Sensitization, respiratory	Category 1
	Carcinogenicity	Category 1B
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
<b>Environmental hazards</b>	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 3
<b>OSHA defined hazards</b>	Not classified.	

## Label elements



**Signal word**

Danger

**Hazard statement**

Flammable liquid and vapor. Harmful if swallowed. Harmful in contact with skin. Causes skin irritation. Causes serious eye irritation. Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation. May cause cancer. Very toxic to aquatic life. Harmful to aquatic life with long lasting effects.

**Precautionary statement**

**Prevention**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation wear respiratory protection.

**Response**

If swallowed: Call a poison center/doctor if you feel unwell. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: 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. Continue rinsing. If exposed or concerned: Get medical advice/attention. Call a poison center/doctor if you feel unwell. Specific treatment (see this label). Rinse mouth. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. If experiencing respiratory symptoms: Call a poison center/doctor. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish. Collect spillage.

**Storage**

Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.

**Disposal**

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

**Hazard(s) not otherwise classified (HNOC)**

None known.

**Supplemental information**

95.41% of the mixture consists of component(s) of unknown acute dermal toxicity. 82.4% of the mixture consists of component(s) of unknown acute inhalation toxicity. 2.98% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

## 3. Composition/information on ingredients

**Mixtures**

Chemical name	Common name and synonyms	CAS number	%
Diesel		68476-30-2	60 - < 100
Barite		7727-43-7	10 - < 30
Calcium Chloride		10043-52-4	1 - < 5
Calcium hydroxide		1305-62-0	1 - < 5
Distillates, petroleum, hydrotreated middle		64742-46-7	< 1

Chemical name	Common name and synonyms	CAS number	%
2-Butoxyethanol		111-76-2	< 0.2
Ethylbenzene		100-41-4	< 0.1
Xylenes		1330-20-7	< 0.1
Other components below reportable levels			5 - < 10

#### 4. First-aid measures

<b>Inhalation</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
<b>Skin contact</b>	Take off immediately all contaminated clothing. Wash off immediately with soap and plenty of water. Get medical advice/attention if you feel unwell. Get medical attention if irritation develops or persists. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
<b>Eye contact</b>	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
<b>Ingestion</b>	Get medical attention immediately. Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical advice/attention if you feel unwell.
<b>Most important symptoms/effects, acute and delayed</b>	Difficulty in breathing. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain.
<b>Indication of immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
<b>General information</b>	Take off all contaminated clothing immediately. In case of shortness of breath, give oxygen. If you feel unwell, seek medical advice (show the label where possible). IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Keep victim warm. Wash contaminated clothing before reuse.

#### 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Water fog. Foam. Dry chemical powder. Dry chemical, CO2, water spray or regular foam.
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.



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**Fire-fighting equipment/instructions**

In case of fire and/or explosion do not breathe fumes. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. ALWAYS stay away from tanks engulfed in flame. Move containers from fire area if you can do so without risk.

**Specific methods**

Use standard firefighting procedures and consider the hazards of other involved materials.

**General fire hazards**

Flammable liquid and vapor.

**6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors and spray mists. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Methods and materials for containment and cleaning up**

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Prevent entry into waterways, sewers, basements or confined areas. Keep combustibles (wood, paper, oil, etc.) away from spilled material. The product is immiscible with water and will spread on the water surface.

Large Spills: Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Dike the spilled material, where this is possible. After removal flush contaminated area thoroughly with water. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Clean contaminated surface thoroughly. This material and its container must be disposed of as hazardous waste. Prevent entry into waterways, sewer, basements or confined areas. Clean up in accordance with all applicable regulations. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Never return spills in original containers for re-use.

**Environmental precautions**

Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.



## 7. Handling and storage

### Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not get this material in your eyes, on your skin, or on your clothing. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get this material in contact with skin. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Do not get this material on clothing. Do not taste or swallow. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash thoroughly after handling. Observe good industrial hygiene practices. Wash contaminated clothing before reuse. Avoid release to the environment. Do not empty into drains.

### Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Refrigeration recommended. Store away from incompatible materials (see Section 10 of the SDS). Keep in an area equipped with sprinklers. Store in accordance with local/regional/national/international regulation.

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
2-Butoxyethanol (CAS 111-76-2)	PEL	240 mg/m <sup>3</sup>	
Barite (CAS 7727-43-7)	PEL	50 ppm	Respirable fraction.
		5 mg/m <sup>3</sup>	
Calcium hydroxide (CAS 1305-62-0)	PEL	15 mg/m <sup>3</sup>	Total dust.
		5 mg/m <sup>3</sup>	Respirable fraction.
Ethylbenzene (CAS 100-41-4)	PEL	15 mg/m <sup>3</sup>	Total dust.
		435 mg/m <sup>3</sup>	
Xylenes (CAS 1330-20-7)	PEL	100 ppm	
		435 mg/m <sup>3</sup>	
		100 ppm	

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
2-Butoxyethanol (CAS 111-76-2)	TWA	20 ppm	
Barite (CAS 7727-43-7)	TWA	10 mg/m <sup>3</sup>	
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m <sup>3</sup>	
Diesel (CAS 68476-30-2)	TWA	100 mg/m <sup>3</sup>	Inhalable fraction and vapor.
Ethylbenzene (CAS 100-41-4)	TWA	20 ppm	

**US. ACGIH Threshold Limit Values**

Components	Type	Value	Form
Xylenes (CAS 1330-20-7)	STEL	150 ppm	
	TWA	100 ppm	

**US. NIOSH: Pocket Guide to Chemical Hazards**

Components	Type	Value	Form
2-Butoxyethanol (CAS 111-76-2)	TWA	24 mg/m3	
Barite (CAS 7727-43-7)	TWA	5 ppm	Respirable. Total
		5 mg/m3	
		10 mg/m3	
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m3	
Ethylbenzene (CAS 100-41-4)	STEL	545 mg/m3	
	TWA	125 ppm 435 mg/m3 100 ppm	

**Biological limit values**

**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
2-Butoxyethanol (CAS 111-76-2)	200 mg/g	Butoxyacetic acid (BAA), with hydrolysis	Creatinine in urine	*
Ethylbenzene (CAS 100-41-4)	0.7 g/g	Sum of mandelic acid and phenylglyoxylic acid	Creatinine in urine	*
Xylenes (CAS 1330-20-7)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*

\* - For sampling details, please see the source document.

**Exposure guidelines**

**US - California OELs: Skin designation**

2-Butoxyethanol (CAS 111-76-2) Can be absorbed through the skin.

**US - Minnesota Haz Subs: Skin designation applies**

2-Butoxyethanol (CAS 111-76-2) Skin designation applies.

**US - Tennessee OELs: Skin designation**

2-Butoxyethanol (CAS 111-76-2) Can be absorbed through the skin.

**US ACGIH Threshold Limit Values: Skin designation**

Diesel (CAS 68476-30-2) Can be absorbed through the skin.

**US NIOSH Pocket Guide to Chemical Hazards: Skin designation**

2-Butoxyethanol (CAS 111-76-2) Can be absorbed through the skin.

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

2-Butoxyethanol (CAS 111-76-2) Can be absorbed through the skin.

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<b>Appropriate engineering controls</b>	Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) 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. Eye wash facilities and emergency shower must be available when handling this product.
<b>Individual protection measures, such as personal protective equipment</b>	
<b>Eye/face protection</b>	Face-shield. Chemical respirator with organic vapor cartridge and full facepiece.
<b>Hand protection</b>	Wear appropriate chemical resistant gloves.
<b>Skin protection</b>	Do not get this material in your eyes, on your skin, or on your clothing. Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
<b>Respiratory protection</b>	Chemical respirator with organic vapor cartridge and full facepiece. A NIOSH- approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.
<b>Thermal hazards</b>	Wear appropriate thermal protective clothing, when necessary.
<b>General hygiene considerations</b>	When using do not smoke. Keep away from food and drink. 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.

## 9. Physical and chemical properties

<b>Appearance</b>	Liquid.
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>Color</b>	Brown. - Black.
<b>Odor</b>	Diesel odor
<b>Odor threshold</b>	Not available.
<b>pH</b>	10.5 @ 10% aq solution.
<b>Melting point/freezing point</b>	Not available.
<b>Initial boiling point and boiling range</b>	> 250 °F (> 121.11 °C)
<b>Flash point</b>	125.0 - 150.0 °F (51.7 - 65.6 °C)
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not available.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not available.
<b>Flammability limit - upper (%)</b>	Not available.
<b>Explosive limit - lower (%)</b>	Not available.
<b>Explosive limit - upper (%)</b>	Not available.
<b>Vapor pressure</b>	Not available.
<b>Vapor density</b>	Not available.

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<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Insoluble
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Other information</b>	
<b>Density</b>	6.50 - 20.00 lbs/gal
<b>Specific gravity</b>	> 0.80

### 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Chemical stability</b>	No hazards to be especially mentioned.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.
<b>Conditions to avoid</b>	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
<b>Incompatible materials</b>	Aluminum. Phosphorus.
<b>Hazardous decomposition products</b>	No hazardous decomposition products are known.

### 11. Toxicological information

#### Information on likely routes of exposure

<b>Ingestion</b>	Harmful if swallowed.
<b>Inhalation</b>	Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled
<b>Skin contact</b>	Harmful in contact with skin. Causes skin irritation.
<b>Eye contact</b>	Causes serious eye irritation.

**Symptoms related to the physical, chemical and toxicological characteristics** Difficulty in breathing. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain. May cause respiratory irritation.

#### Information on toxicological effects

**Acute toxicity** Causes burns. Harmful if inhaled. Harmful in contact with skin. Harmful if swallowed. May cause respiratory irritation.

<b>Components</b>	<b>Species</b>	<b>Test Results</b>
2-Butoxyethanol (111-76-2)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	400 mg/kg
<i>Inhalation</i>		
LC50	Rat	450 mg/l, 4 Hours

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Components	Species	Test Results
Oral LD50	Rat	560 mg/kg
Calcium hydroxide (1305-62-0)		
<b>Acute</b>		
Oral LD50	Rat	7340 mg/kg
Diesel (68476-30-2)		
<b>Acute</b>		
Oral LD50	Rat	12000 mg/kg
Ethylbenzene (100-41-4)		
<b>Acute</b>		
Dermal LD50	Rabbit	17800 mg/kg
Oral LD50	Rat	3500 mg/kg
Xylenes (1330-20-7)		
<b>Acute</b>		
Dermal LD50	Rabbit	> 2000 mg/kg
Inhalation LC50	Rat	> 5000 ppm, 1 Hours
Oral LD50	Rat	> 2000 mg/kg

\* Estimates for product may be based on additional component data not shown.

**Skin corrosion/irritation** Causes skin irritation.

**Serious eye damage/eye irritation** Causes serious eye irritation.

**Respiratory or skin sensitization**

**Respiratory sensitization** May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Skin sensitization** This product is not expected to cause skin sensitization.

**Germ cell mutagenicity** No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Carcinogenicity**

**IARC Monographs. Overall Evaluation of Carcinogenicity**

- 2-Butoxyethanol (CAS 111-76-2) 3 Not classifiable as to carcinogenicity to humans.
- Ethylbenzene (CAS 100-41-4) 2B Possibly carcinogenic to humans.
- Xylenes (CAS 1330-20-7) 3 Not classifiable as to carcinogenicity to humans.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not listed.

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<b>Reproductive toxicity</b>	This product is not expected to cause reproductive or developmental effects.
<b>Specific target organ toxicity - single exposure</b>	May cause respiratory irritation.
<b>Specific target organ toxicity - repeated exposure</b>	Not classified.
<b>Aspiration hazard</b>	Not available.
<b>Chronic effects</b>	Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.
<b>Further information</b>	This product has no known adverse effect on human health.

## 12. Ecological information

**Ecotoxicity** Very toxic to aquatic life. Harmful to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Components		Species	Test Results
2-Butoxyethanol (111-76-2)			
<b>Aquatic</b>			
Fish	LC50	Fish	1490 mg/L, 96 Hours
Calcium Chloride (10043-52-4)			
<b>Aquatic</b>			
Fish	LC50	Fish	10650 mg/L, 96 Hours
Calcium hydroxide (1305-62-0)			
<b>Aquatic</b>			
Fish	LC50	Fish	160 mg/L, 96 Hours
Diesel (68476-30-2)			
<b>Aquatic</b>			
Fish	LC50	Fish	35 mg/L, 96 Hours
Distillates, petroleum, hydrotreated middle (64742-46-7)			
<b>Aquatic</b>			
Fish	LC50	Fish	35 mg/L, 96 Hours
Ethylbenzene (100-41-4)			
<b>Aquatic</b>			
Crustacea	EC50	Water flea ( <i>Daphnia magna</i> )	1.37 - 4.4 mg/l, 48 hours
Fish	LC50	Fathead minnow ( <i>Pimephales promelas</i> )	7.5 - 11 mg/l, 96 hours
Xylenes (1330-20-7)			
<b>Aquatic</b>			
Fish	LC50	Bluegill ( <i>Lepomis macrochirus</i> )	7.711 - 9.591 mg/l, 96 hours
		Fish	13.4 mg/L, 96 Hours

\* Estimates for product may be based on additional component data not shown.

<b>Persistence and degradability</b>	Not available.
<b>Bioaccumulative potential</b>	Not available.

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**Partition coefficient n-octanol / water (log Kow)**

2-Butoxyethanol	0.83
Ethylbenzene	3.15
Xylenes	3.12 - 3.2

**Mobility in soil** No data available.

**Other adverse effects** No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

**13. Disposal considerations**

**Disposal instructions** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations** Dispose in accordance with all applicable regulations.

**Hazardous waste code** The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**US RCRA Hazardous Waste U List: Reference**

Xylenes (CAS 1330-20-7)	U239
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**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 (see: Disposal instructions).

**Contaminated packaging** Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

**14. Transport information**

**DOT**

<b>UN number</b>	UN1993
<b>UN proper shipping name</b>	Flammable liquids, n.o.s. (Diesel)
<b>Transport hazard class(es)</b>	
<b>Class</b>	3
<b>Subsidiary risk</b>	-
<b>Label(s)</b>	3
<b>Packing group</b>	III
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.
<b>Special provisions</b>	B1, B52, IB3, T4, TP1, TP29
<b>Packaging exceptions</b>	150
<b>Packaging non bulk</b>	203
<b>Packaging bulk</b>	242

**TDG**

<b>UN number</b>	UN1993
<b>UN proper shipping name</b>	FLAMMABLE LIQUID, N.O.S. (Diesel)
<b>Transport hazard class(es)</b>	
<b>Class</b>	3
<b>Subsidiary risk</b>	-
<b>Packing group</b>	III
<b>Special provisions</b>	16

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**IATA**

**UN number** UN1993  
**UN proper shipping name** Flammable liquid, n.o.s. (Diesel)  
**Transport hazard class(es)**  
    **Class** 3  
    **Subsidiary risk** -  
**Packing group** III  
**Environmental hazards** No.  
**ERG Code** 3L  
**Other information**  
    **Passenger and cargo aircraft** Allowed.  
    **Cargo aircraft only** Allowed.

**IMDG**

**UN number** UN1993  
**UN proper shipping name** FLAMMABLE LIQUID, N.O.S. (Diesel)  
**Transport hazard class(es)**  
    **Class** 3  
    **Subsidiary risk** -  
**Packing group** III  
**Environmental hazards**  
    **Marine pollutant** No.  
**EmS** F-E, S-E

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** This substance/mixture is not intended to be transported in bulk.

**DOT**



**IATA; IMDG; TDG**





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## 15. Regulatory information

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.  
CERCLA/SARA Hazardous Substances - Not applicable.

One or more components are not listed on TSCA.

### TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

### CERCLA Hazardous Substance List (40 CFR 302.4)

Ethylbenzene (CAS 100-41-4) Listed.  
Xylenes (CAS 1330-20-7) Listed.

### SARA 304 Emergency release notification

Not regulated.

### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

**Hazard categories** Immediate Hazard - Yes  
Delayed Hazard - Yes  
Fire Hazard - Yes  
Pressure Hazard - No  
Reactivity Hazard - No

### SARA 302 Extremely hazardous substance

Not listed.

**SARA 311/312 Hazardous chemical** No

### SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Ethylbenzene	100-41-4	< 0.1

### Other federal regulations

#### Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Ethylbenzene (CAS 100-41-4)  
Xylenes (CAS 1330-20-7)

#### Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

**Safe Drinking Water Act (SDWA)** Not regulated.

**US state regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

#### US. Massachusetts RTK - Substance List

2-Butoxyethanol (CAS 111-76-2)  
Barite (CAS 7727-43-7)  
Calcium hydroxide (CAS 1305-62-0)  
Ethylbenzene (CAS 100-41-4)  
Xylenes (CAS 1330-20-7)

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**Disclaimer**

THIS PRODUCT'S HEALTH AND SAFETY INFORMATION IS PROVIDED TO ASSIST OUR CUSTOMERS IN ASSESSING COMPLIANCE WITH HEALTH, SAFETY AND ENVIRONMENTAL REGULATIONS. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US, AND IS BELIEVED TO BE ACCURATE, ALTHOUGH NO GUARANTEE OR WARRANTY IS PROVIDED OR IMPLIED BY THE COMPANY IN THIS RESPECT. SINCE THE USE OF THIS PRODUCT IS WITHIN THE EXCLUSIVE CONTROL OF THE USER, IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE CONDITIONS OF SAFE USE. SUCH CONDITIONS MUST COMPLY WITH ALL GOVERNMENTAL REGULATIONS. The information in the sheet was written based on the best knowledge and experience currently available.

## Material Safety Data Sheet

# Synvert I



### 1. Product and Company Identification

<b>Material name</b>	<b>Synvert I</b>
<b>Patent Number</b>	Not available
<b>Revision date</b>	June-23-2010
<b>Version No.</b>	1
<b>CAS #</b>	Mixture
<b>Manufacturer information</b>	INTEGRITY INDUSTRIES INC.
<b>Supplier information</b>	INTEGRITY INDUSTRIES INC. P O BOX 5342 Kingsville, TX 78363
<b>Supplier emergency telephone number(s)</b>	CHEMTREC 1-800-424-9300/361-595-5561

### 2. Hazards Identification

<b>Emergency overview</b>	<b>WARNING</b>  Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin. 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged and may cause blood damage. These effects have not been observed in humans. Prolonged exposure may cause chronic effects. Components of the product may be absorbed into the body by inhalation, ingestion and through the skin. This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>OSHA regulatory status</b>	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
<b>Potential health effects</b>	
<b>Routes of exposure</b>	Inhalation. Skin contact. Eye contact. Ingestion.
<b>Eyes</b>	Do not get this material in contact with eyes. Irritating to eyes.
<b>Skin</b>	Do not get this material in contact with skin. Harmful if absorbed through the skin. 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged and may cause blood damage. These effects have not been observed in humans. May cause sensitization by skin contact.
<b>Inhalation</b>	Do not breathe vapor. Irritating to respiratory system. Prolonged inhalation may be harmful.
<b>Ingestion</b>	Do not ingest. Harmful if swallowed.

<b>Target organs</b>	<p>Kidney.</p> <p>2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged and may cause blood damage. These effects have not been observed in humans.</p>
<b>Chronic effects</b>	<p>Blood. Central nervous system. Eyes. Liver. Lungs. Respiratory system. Skin.</p> <p>This product may be harmful if it is absorbed through the skin. Unconsciousness. Shortness of breath. Edema. Jaundice. Cyanosis. Liver injury may occur. Kidney injury may occur. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. May cause delayed lung damage.</p>
<b>Signs and symptoms</b>	<p>Unconsciousness. Discomfort in the chest. Shortness of breath. Narcosis. Cyanosis. Decrease in motor functions. Behavioral changes. Cough. Edema. Liver enlargement. Jaundice. Proteinuria.</p>
<b>Potential environmental effects</b>	<p>Components of this product are hazardous to aquatic life. May cause long-term adverse effects in the environment.</p>

### 3. Composition / Information on Ingredients

Components	CAS #	Percent
2-Butoxyethanol	111-76-2	5 - 10

### 4. First Aid Measures

<b>First aid procedures</b>	
<b>Eye contact</b>	Immediately flush eye(s) with plenty of water. Get medical attention immediately.
<b>Skin contact</b>	Immediately flush skin with plenty of water. Remove and isolate contaminated clothing and shoes. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
<b>Inhalation</b>	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention immediately.
<b>Ingestion</b>	Get medical attention immediately. Have victim rinse mouth thoroughly with water. Do not induce vomiting without medical advice. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
<b>Notes to physician</b>	In case of shortness of breath, give oxygen. Keep victim warm. Symptoms may be delayed.
<b>General advice</b>	In case of shortness of breath, give oxygen. Keep victim warm. Call a physician if symptoms develop or persist. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

### 5. Fire Fighting Measures

<b>Flammable properties</b>	Containers may explode when heated. Runoff to sewer may cause fire or explosion hazard.
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**Extinguishing media**

**Suitable extinguishing media** Water. Water fog. Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Unsuitable extinguishing media** Do not use a solid water stream as it may scatter and spread fire.

**Protection of firefighters**

**Specific hazards arising from the chemical** Fire may produce irritating, corrosive and/or toxic gases.

**Protective equipment and precautions for firefighters** In the event of fire and/or explosion do not breathe fumes. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Move containers from fire area if you can do it without risk. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

**6. Accidental Release Measures**

**Personal precautions**

Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

**Methods for containment**

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

**Methods for cleaning up**

Should not be released into the environment.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

**7. Handling and Storage**

**Handling**

Use only with adequate ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Keep away from sources of ignition - No smoking. Wash thoroughly after handling. Avoid prolonged exposure. Avoid release to the environment.

**Storage**

The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in cool place. Keep in a well-ventilated place. Keep this material away from food, drink and animal feed. Keep out of the reach of children. Use care in handling/storage. Keep away from heat and flame.

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## 8. Exposure Controls / Personal Protection

### Exposure limits

#### ACGIH

Components	CAS #	TWA	STEL	Ceiling
2-Butoxyethanol	111-76-2	20 ppm	Not established	Not established

#### OSHA

Components	CAS #	TWA	STEL	Ceiling
2-Butoxyethanol	111-76-2	50 ppm	Not established	Not established

### Engineering controls

Ensure adequate ventilation, especially in confined areas.

### Personal protective equipment

#### Eye / face protection

Do not get this material in contact with eyes. Wear chemical goggles. Face-shield.

#### Skin protection

Do not get this material in contact with skin. Do not get this material on clothing. Protective gloves. Impervious gloves. Wear appropriate chemical resistant gloves. Wear suitable protective clothing.

#### Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. A NIOSH- approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

#### General hygiene considerations

Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not get this material on clothing. When using do not eat or drink. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical & Chemical Properties

<b>Appearance</b>	Viscous liquid.
<b>Color</b>	Dark brown.
<b>Odor</b>	Amine-like.
<b>Odor threshold</b>	Not available
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>pH</b>	Not available
<b>Melting point</b>	Not available
<b>Freezing point</b>	Not available
<b>Boiling point</b>	210 - 215 °F (98.9 - 101.7 °C)
<b>Flash point</b>	> 200 °F (> 93.3 °C)
<b>Evaporation rate</b>	Not available
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available
<b>Flammability limits in air, lower, % by volume</b>	Not available

<b>Vapor pressure</b>	< 1
<b>Vapor density</b>	Not available
<b>Specific gravity</b>	0.98
<b>Relative density</b>	0.9799 g/cm <sup>3</sup> estimated
<b>Solubility (water)</b>	Insoluble
<b>Partition coefficient (n-octanol/water)</b>	Not available
<b>Auto-ignition temperature</b>	Not available
<b>Decomposition temperature</b>	Not available
<b>VOC</b>	4.03 % estimated

### 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	Stable at normal conditions.
<b>Conditions to avoid</b>	Heat, flames and sparks. Avoid high temperatures.
<b>Incompatible materials</b>	Strong acids.
<b>Hazardous decomposition products</b>	Carbon oxides. Nitrogen oxides (NO <sub>x</sub> ).
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.

### 11. Toxicological Information

<b>Acute effects</b>	Acute LD50: 9376 mg/kg estimated, Rat, Oral Acute LD50: 49603 mg/kg estimated, Rat, Dermal Acute LC50: 17361 mg/l/4h estimated, Rat, Inhalation
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#### Component analysis - LD50

##### Toxicology Data - Selected LD50s and LC50s

2-Butoxyethanol	111-76-2	Inhalation LC50 Rat: 2.21 mg/L/4H; Inhalation LC50 Rat:450 ppm/4H; Oral LD50 Rat:470 mg/kg; Dermal LD50 Rat:2270 mg/kg; Dermal LD50 Rabbit:220 mg/kg
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<b>Sensitization</b>	May cause sensitization of susceptible persons.
<b>Local effects</b>	Liver toxicity. Blood disorder may occur after ingestion. Irritating to respiratory system.
<b>Chronic effects</b>	Hazardous by OSHA criteria. This product may be harmful if it is absorbed through the skin. Repeated absorption may cause disorder of central nervous system, liver, kidneys and blood. Prolonged or repeated exposure may cause lung injury. Prolonged exposure may cause chronic effects.

2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans.

<b>Subchronic effects</b>	Kidney injury may occur. Blood disorder may occur after ingestion. Blood disorder may occur after prolonged inhalation. Blood disorder may occur after prolonged skin contact.
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<b>Carcinogenicity</b>	Possible carcinogen.
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##### ACGIH - Threshold Limit Values - Carcinogens

2-Butoxyethanol	111-76-2	A3 - Confirmed animal carcinogen with unknown relevance to humans
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<b>Neurological effects</b>	Hazardous by OSHA criteria.
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<b>Further information</b>	Symptoms may be delayed.
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## 12. Ecological Information

<b>Ecotoxicity</b>		LC50 36954 mg/L estimated, Fish, 96.00 Hours, IC50 1575 mg/L estimated, Algae, 72.00 Hours,
<b>Ecotoxicity - Freshwater Fish Species Data</b>		
2-Butoxyethanol	111-76-2	96 Hr LC50 Lepomis macrochirus: 1490 mg/L [static]
<b>Ecotoxicity - Water Flea Data</b>		
2-Butoxyethanol	111-76-2	24 Hr EC50 water flea: 1720 mg/L; 24 Hr LC50 Daphnia magna: 1698-1940 mg/L
<b>Environmental effects</b>		Harmful to aquatic life.
<b>Ecotoxicity - Freshwater Fish Species Data</b>		
2-Butoxyethanol	111-76-2	96 Hr LC50 Lepomis macrochirus: 1490 mg/L [static]
<b>Ecotoxicity - Water Flea Data</b>		
2-Butoxyethanol	111-76-2	24 Hr EC50 water flea: 1720 mg/L; 24 Hr LC50 Daphnia magna: 1698-1940 mg/L

## 13. Disposal Considerations

<b>Disposal instructions</b>	Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.
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## 14. Transport Information

### Department of Transportation (DOT) Requirements

Not regulated as hazardous goods.

### Department of Transportation (DOT) Requirements

Not regulated as dangerous goods.

### Canadian Transportation of Dangerous Goods (TDG) Requirements

Not regulated as hazardous goods.

### IMDG

Not regulated as hazardous goods.

### IATA

Not regulated as hazardous goods.

### Transportation information

According to the CFR 173.120, A combustible liquid which does not sustain combustion is not subject to the requirements of this subchapter as a combustible liquid.

## 15. Regulatory Information

### Labelling

**Contains** 2-Butoxyethanol



**US federal regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.  
All components are on the U.S. EPA TSCA Inventory List.

**U.S. - CERCLA/SARA - Section 313 - Emission Reporting**

2-Butoxyethanol	111-76-2	1.0 % de minimis concentration (applies to R-(OCH <sub>2</sub> CH <sub>2</sub> ) <sub>n</sub> -OR', where n = 1,2, or 3, R=alkyl C7 or less, or R = phenyl or alkyl substituted phenyl, R' = H or alkyl C7 or less, or OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate, Chemical Category N230)
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**U.S. - FDA - Direct Food Additives**

2-Butoxyethanol	111-76-2	21 CFR 173.315
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**Occupational Safety and Health Administration (OSHA)**

**29 CFR 1910.1200 hazardous chemical** Yes

**CERCLA (Superfund) reportable quantity**

None

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

<b>Hazard categories</b>	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
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<b>Section 302 extremely hazardous substance</b>	No
<b>Section 311 hazardous chemical</b>	Yes

**Inventory status**

<b>Country(s) or region</b>	<b>Inventory name</b>	<b>On inventory (yes/no)*</b>
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**International regulations**

**Canada - WHMIS - Ingredient Disclosure List**

2-Butoxyethanol	111-76-2	1 %
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**State regulations**

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**U.S. - Massachusetts - Right To Know List**

2-Butoxyethanol 111-76-2 Present

**U.S. - Minnesota - Hazardous Substance List**

2-Butoxyethanol 111-76-2 Skin

**U.S. - New Jersey - Right to Know Hazardous Substance List**

2-Butoxyethanol 111-76-2 sn 0275

**U.S. - Pennsylvania - RTK (Right to Know) List**

2-Butoxyethanol 111-76-2 Present

**U.S. - Rhode Island - Hazardous Substance List**

2-Butoxyethanol 111-76-2 Toxic (skin)

**U.S. - Texas - Effects Screening Levels - Long Term**

2-Butoxyethanol 111-76-2 5 ppb ESL; 24 µg/m3 ESL

**U.S. - Texas - Effects Screening Levels - Short Term**

2-Butoxyethanol 111-76-2 50 ppb ESL; 240 µg/m3 ESL

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**16. Other Information**

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**HMIS® ratings**

Health: 2\*  
Flammability: 1  
Physical hazard: 0

**NFPA ratings**

Health: 2  
Flammability: 1  
Instability: 0

**Prepared by**

Product Stewardship  
515 Post Oak Blvd  
Houston, TX 77027  
+1-713-968-2306

**Disclaimer**

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**Issue date**

June-23-2010

## Material Safety Data Sheet

# Synvert II

HEALTH	*	2
FLAMMABILITY		2
PHYSICAL HAZARD		0
PERSONAL PROTECTION		

### 1. Product and Company Identification

<b>Material name</b>	<b>Synvert II</b>
<b>Patent Number</b>	Not available
<b>Revision date</b>	June-23-2010
<b>Version No.</b>	1
<b>CAS #</b>	Mixture
<b>Manufacturer information</b>	INTEGRITY INDUSTRIES INC.
<b>Supplier information</b>	INTEGRITY INDUSTRIES INC. P O BOX 5342 Kingsville, TX 78363
<b>Supplier emergency telephone number(s)</b>	CHEMTREC 1-800-424-9300/361-595-5561

### 2. Hazards Identification

<b>Emergency overview</b>	<b>WARNING</b>  Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin. 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged and may cause blood damage. These effects have not been observed in humans. Prolonged exposure may cause chronic effects. Components of the product may be absorbed into the body by inhalation, ingestion and through the skin. This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>OSHA regulatory status</b>	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
<b>Potential health effects</b>	
<b>Routes of exposure</b>	Inhalation. Skin contact. Eye contact. Ingestion.
<b>Eyes</b>	Do not get this material in contact with eyes. Irritating to eyes.
<b>Skin</b>	Do not get this material in contact with skin. Harmful if absorbed through the skin. 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged and may cause blood damage. These effects have not been observed in humans. May cause sensitization by skin contact.
<b>Inhalation</b>	Do not breathe vapor. Irritating to respiratory system. Prolonged inhalation may be harmful.
<b>Ingestion</b>	Do not ingest. Harmful if swallowed.

<b>Target organs</b>	Kidney.  2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged and may cause blood damage. These effects have not been observed in humans.
<b>Chronic effects</b>	Blood. Central nervous system. Eyes. Liver. Lungs. Respiratory system. Skin. This product may be harmful if it is absorbed through the skin. Unconsciousness. Shortness of breath. Edema. Jaundice. Cyanosis. Liver injury may occur. Kidney injury may occur. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. May cause delayed lung damage.
<b>Signs and symptoms</b>	Unconsciousness. Discomfort in the chest. Shortness of breath. Narcosis. Cyanosis. Decrease in motor functions. Behavioral changes. Cough. Edema. Liver enlargement. Jaundice. Proteinuria.
<b>Potential environmental effects</b>	Components of this product are hazardous to aquatic life. May cause long-term adverse effects in the environment.

### 3. Composition / Information on Ingredients

Components	CAS #	Percent
Biobase 300	8012-95-1	40 - 70
2-Butoxyethanol	111-76-2	5 - 10

### 4. First Aid Measures

<b>First aid procedures</b>	
<b>Eye contact</b>	Immediately flush eye(s) with plenty of water. Get medical attention immediately.
<b>Skin contact</b>	Immediately flush skin with plenty of water. Remove and isolate contaminated clothing and shoes. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
<b>Inhalation</b>	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention immediately.
<b>Ingestion</b>	Get medical attention immediately. Have victim rinse mouth thoroughly with water. Do not induce vomiting without medical advice. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
<b>Notes to physician</b>	In case of shortness of breath, give oxygen. Keep victim warm. Symptoms may be delayed.
<b>General advice</b>	In case of shortness of breath, give oxygen. Keep victim warm. Call a physician if symptoms develop or persist. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

### 5. Fire Fighting Measures

<b>Flammable properties</b>	Containers may explode when heated. Runoff to sewer may cause fire or explosion hazard.
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**Extinguishing media**

**Suitable extinguishing media** Water. Water fog. Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Unsuitable extinguishing media** Do not use a solid water stream as it may scatter and spread fire.

**Protection of firefighters**

**Specific hazards arising from the chemical** Fire may produce irritating, corrosive and/or toxic gases.

**Protective equipment and precautions for firefighters** In the event of fire and/or explosion do not breathe fumes. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Move containers from fire area if you can do it without risk. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

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**6. Accidental Release Measures****Personal precautions**

Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

**Methods for containment**

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

**Methods for cleaning up**

Should not be released into the environment.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

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**7. Handling and Storage****Handling**

Use only with adequate ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Keep away from sources of ignition - No smoking. Wash thoroughly after handling. Avoid prolonged exposure. Avoid release to the environment.

**Storage**

The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in cool place. Keep in a well-ventilated place. Keep this material away from food, drink and animal feed. Keep out of the reach of children. Use care in handling/storage. Keep away from heat and flame.

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## 8. Exposure Controls / Personal Protection

### Exposure limits

#### ACGIH

Components	CAS #	TWA	STEL	Ceiling
Biobase 300	8012-95-1	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	Not established
2-Butoxyethanol	111-76-2	20 ppm	Not established	Not established

#### OSHA

Components	CAS #	TWA	STEL	Ceiling
Biobase 300	8012-95-1	5 mg/m <sup>3</sup>	Not established	Not established
2-Butoxyethanol	111-76-2	50 ppm	Not established	Not established

### Engineering controls

Ensure adequate ventilation, especially in confined areas.

### Personal protective equipment

#### Eye / face protection

Do not get this material in contact with eyes. Wear chemical goggles. Face-shield.

#### Skin protection

Do not get this material in contact with skin. Do not get this material on clothing. Protective gloves. Impervious gloves. Wear appropriate chemical resistant gloves. Wear suitable protective clothing.

#### Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. A NIOSH- approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

#### General hygiene considerations

Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not get this material on clothing. When using do not eat or drink. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical & Chemical Properties

<b>Appearance</b>	Liquid.
<b>Color</b>	Brown
<b>Odor</b>	Amine-like.
<b>Odor threshold</b>	Not available
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>pH</b>	Not available
<b>Melting point</b>	< 32 °F (< 0 °C)
<b>Freezing point</b>	Not available
<b>Boiling point</b>	518 °F (270 °C)
<b>Flash point</b>	160 °F (71.1 °C)
<b>Evaporation rate</b>	Not available
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available

<b>Flammability limits in air, lower, % by volume</b>	Not available
<b>Vapor pressure</b>	< 1
<b>Vapor density</b>	Not available
<b>Specific gravity</b>	0.96
<b>Relative density</b>	0.9599 g/cm <sup>3</sup> estimated
<b>Solubility (water)</b>	Insoluble
<b>Partition coefficient (n-octanol/water)</b>	Not available
<b>Auto-ignition temperature</b>	Not available
<b>Decomposition temperature</b>	Not available
<b>VOC</b>	4.03 % estimated

### 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	Stable at normal conditions.
<b>Conditions to avoid</b>	Heat, flames and sparks. Avoid high temperatures.
<b>Incompatible materials</b>	This product is incompatible with nitrates. Strong acids.
<b>Hazardous decomposition products</b>	Carbon oxides. Nitrogen oxides (NO <sub>x</sub> ).
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.

### 11. Toxicological Information

<b>Acute effects</b>	Acute LD50: 7111 mg/kg estimated, Rat, Oral Acute LD50: 3727 mg/kg estimated, Rat, Dermal Acute LC50: 809 mg/l/4h estimated, Rat, Inhalation
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#### Component analysis - LD50

##### Toxicology Data - Selected LD50s and LC50s

2-Butoxyethanol	111-76-2	Inhalation LC50 Rat: 2.21 mg/L/4H; Inhalation LC50 Rat:450 ppm/4H; Oral LD50 Rat:470 mg/kg; Dermal LD50 Rat:2270 mg/kg; Dermal LD50 Rabbit:220 mg/kg
Biobase 300	8012-95-1	Oral LD50 Mouse: 22 g/kg

<b>Local effects</b>	Liver toxicity. Blood disorder may occur after ingestion. Irritating to respiratory system.
<b>Chronic effects</b>	Hazardous by OSHA criteria. This product may be harmful if it is absorbed through the skin. Repeated absorption may cause disorder of central nervous system, liver, kidneys and blood. Prolonged or repeated exposure may cause lung injury. Prolonged exposure may cause chronic effects.

2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans.

<b>Subchronic effects</b>	Kidney injury may occur. Blood disorder may occur after ingestion. Blood disorder may occur after prolonged inhalation. Blood disorder may occur after prolonged skin contact.
<b>Carcinogenicity</b>	May cause cancer.

##### ACGIH - Threshold Limit Values - Carcinogens

2-Butoxyethanol	111-76-2	A3 - Confirmed animal carcinogen with unknown relevance to humans
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<b>Neurological effects</b>	Hazardous by OSHA criteria.
<b>Further information</b>	Symptoms may be delayed.

## 12. Ecological Information

**Ecotoxicity** LC50 36976 mg/L estimated, Fish, 96.00 Hours,  
EC50 14.61 mg/L estimated, Daphnia, 48.00 Hours,  
IC50 7193 mg/L estimated, Algae, 72.00 Hours,

**Ecotoxicity - Freshwater Fish Species Data**

2-Butoxyethanol 111-76-2 96 Hr LC50 Lepomis macrochirus: 1490 mg/L [static]

**Ecotoxicity - Water Flea Data**

2-Butoxyethanol 111-76-2 24 Hr EC50 water flea: 1720 mg/L; 24 Hr LC50 Daphnia magna: 1698-1940 mg/L

**Environmental effects** Harmful to aquatic life.

**Ecotoxicity - Freshwater Fish Species Data**

2-Butoxyethanol 111-76-2 96 Hr LC50 Lepomis macrochirus: 1490 mg/L [static]

**Ecotoxicity - Water Flea Data**

2-Butoxyethanol 111-76-2 24 Hr EC50 water flea: 1720 mg/L; 24 Hr LC50 Daphnia magna: 1698-1940 mg/L

## 13. Disposal Considerations

**Disposal Instructions** Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

## 14. Transport Information

**Department of Transportation (DOT) Requirements**

**Bulk**

**Basic shipping requirements:**

**Proper shipping name** Combustible liquid, n.o.s. (BIOBASE 300, 2-BUTOXYETHANOL)

**Hazard class** Comb liq

**Subsidiary hazard class** None

**UN number** NA1993

**Packing group** III

**Additional information:**

**Special provisions** IB3, T1, T4, TP1

**Packaging exceptions** 150

**Packaging non bulk** 203

**Packaging bulk** 241

**Canadian Transportation of Dangerous Goods (TDG) Requirements**

Not regulated as hazardous goods.

**IMDG**

Not regulated as hazardous goods.

**IATA**

Not regulated as hazardous goods.

## 15. Regulatory Information

### Labelling

**Contains** 2-Butoxyethanol, Biobase 300

### US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

#### U.S. - CERCLA/SARA - Section 313 - Emission Reporting

2-Butoxyethanol	111-76-2	1.0 % de minimis concentration (applies to R-(OCH <sub>2</sub> CH <sub>2</sub> ) <sub>n</sub> -OR', where n = 1,2, or 3, R=alkyl C7 or less, or R = phenyl or alkyl substituted phenyl, R' = H or alkyl C7 or less, or OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate, Chemical Category N230)
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#### U.S. - FDA - Direct Food Additives

2-Butoxyethanol	111-76-2	21 CFR 173.315
Biobase 300	8012-95-1	21 CFR 172.878, 21 CFR 173.340

### Occupational Safety and Health Administration (OSHA)

**29 CFR 1910.1200 hazardous chemical** Yes

### CERCLA (Superfund) reportable quantity

None

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

**Hazard categories**

- Immediate Hazard - Yes
- Delayed Hazard - Yes
- Fire Hazard - Yes
- Pressure Hazard - No
- Reactivity Hazard - No

**Section 302 extremely hazardous substance** No

**Section 311 hazardous chemical** Yes

### Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)



## International regulations

### Canada - WHMIS - Ingredient Disclosure List

2-Butoxyethanol	111-76-2	1 %
Biobase 300	8012-95-1	1 %

## State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

### U.S. - Massachusetts - Right To Know List

2-Butoxyethanol	111-76-2	Present
Biobase 300	8012-95-1	Present (mist)

### U.S. - Minnesota - Hazardous Substance List

2-Butoxyethanol	111-76-2	Skin
Biobase 300	8012-95-1	Carcinogen

### U.S. - New Jersey - Right to Know Hazardous Substance List

2-Butoxyethanol	111-76-2	sn 0275
Biobase 300	8012-95-1	sn 1437

### U.S. - Pennsylvania - RTK (Right to Know) List

2-Butoxyethanol	111-76-2	Present
Biobase 300	8012-95-1	Present

### U.S. - Rhode Island - Hazardous Substance List

2-Butoxyethanol	111-76-2	Toxic (skin)
Biobase 300	8012-95-1	Flammable; Toxic

### U.S. - Texas - Effects Screening Levels - Long Term

2-Butoxyethanol	111-76-2	5 ppb ESL; 24 µg/m3 ESL
Biobase 300	8012-95-1	5 µg/m3 ESL (mist)

### U.S. - Texas - Effects Screening Levels - Short Term

2-Butoxyethanol	111-76-2	50 ppb ESL; 240 µg/m3 ESL
Biobase 300	8012-95-1	50 µg/m3 ESL (mist)

## 16. Other Information

### HMIS® ratings

Health: 2\*  
Flammability: 2  
Physical hazard: 0

### NFPA ratings

Health: 2  
Flammability: 2  
Instability: 0

### Prepared by

Product Stewardship  
515 Post Oak Blvd  
Houston, TX 77027  
+1-713-968-2306

### Disclaimer

THIS PRODUCT'S HEALTH AND SAFETY INFORMATION IS PROVIDED TO ASSIST OUR CUSTOMERS IN ASSESSING COMPLIANCE WITH HEALTH, SAFETY AND ENVIRONMENTAL REGULATIONS. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US, AND IS BELIEVED TO BE ACCURATE, ALTHOUGH NO GUARANTEE OR WARRANTY IS PROVIDED OR IMPLIED BY THE COMPANY IN THIS RESPECT. SINCE THE USE OF THIS PRODUCT IS WITHIN THE EXCLUSIVE CONTROL OF THE USER, IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE CONDITIONS OF SAFE USE. SUCH CONDITIONS MUST COMPLY WITH ALL GOVERNMENTAL REGULATIONS.

### Issue date

June-23-2010

## Material Safety Data Sheet

# Synvert LEM

HEALTH	*	2
FLAMMABILITY		1
PHYSICAL HAZARD		0
PERSONAL PROTECTION		

### 1. Product and Company Identification

<b>Material name</b>	<b>Synvert LEM</b>
<b>Patent Number</b>	Not available
<b>Revision date</b>	July-27-2010
<b>Version No.</b>	2
<b>CAS #</b>	Mixture
<b>Manufacturer information</b>	INTEGRITY INDUSTRIES INC.
<b>Supplier information</b>	INTEGRITY INDUSTRIES INC. P O BOX 5342 Kingsville, TX 78363
<b>Supplier emergency telephone number(s)</b>	CHEMTREC 1-800-424-9300/361-595-5561

### 2. Hazards Identification

<b>Emergency overview</b>	<b>WARNING</b>
	May be harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes and skin. May cause cancer. Prolonged exposure may cause chronic effects. Components of the product may be absorbed into the body by inhalation, ingestion and through the skin.
<b>OSHA regulatory status</b>	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
<b>Potential health effects</b>	
<b>Routes of exposure</b>	Skin contact. Eye contact. Inhalation. Ingestion.
<b>Eyes</b>	Do not get this material in contact with eyes. Contact may irritate or burn eyes. Eye contact may result in corneal injury.
<b>Skin</b>	Do not get this material in contact with skin. Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash). Prolonged skin contact may result in skin irritation and skin cancer.
<b>Inhalation</b>	Do not inhale/breathe vapors. Prolonged inhalation may be harmful. Vapors and/or aerosols which may be formed at elevated temperatures may be irritating to eyes and respiratory tract.
<b>Ingestion</b>	May cause delayed lung damage. Do not ingest. Components of the product may be absorbed into the body by ingestion.
<b>Target organs</b>	Eyes. Lungs. Respiratory system. Skin.
<b>Chronic effects</b>	Shortness of breath. Conjunctiva. May cause delayed lung damage. Prolonged skin contact may defat the skin and produce dermatitis.
<b>Signs and symptoms</b>	Discomfort in the chest. Shortness of breath. Corneal damage. Cough. Conjunctivitis. Defatting of the skin. Rash. Irritation.

**Potential environmental effects** May cause long-term adverse effects in the environment.

### 3. Composition / Information on Ingredients

Components	CAS #	Percent
Biobase 300	8012-95-1	30 - 60

### 4. First Aid Measures

**First aid procedures**

- Eye contact** If in eyes, rinse with water for 15 minutes. Remove contact lenses, if present and easy to do. Get medical attention if symptoms occur.
- Skin contact** Immediately take off all contaminated clothing. Wash off with warm water and soap. Get medical attention if irritation develops or persists.
- Inhalation** Move to fresh air. Call a physician if symptoms develop or persist.
- Ingestion** Do not induce vomiting without medical advice. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

**Notes to physician**

Symptoms may be delayed.

**General advice**

Call a physician if symptoms develop or persist. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

### 5. Fire Fighting Measures

**Flammable properties**

Containers may explode when heated. Combustible by OSHA criteria.

**Extinguishing media**

- Suitable extinguishing media** Water. Water fog. Dry chemical, CO2, water spray or regular foam.
- Unsuitable extinguishing media** Do not use a solid water stream as it may scatter and spread fire.

**Protection of firefighters**

- Protective equipment and precautions for firefighters** In the event of fire and/or explosion do not breathe fumes. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Move containers from fire area if you can do it without risk. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

### 6. Accidental Release Measures

**Personal precautions**

Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.

**Methods for containment**

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

**Methods for cleaning up**

Should not be released into the environment.

**Large Spills:** Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After removal flush contaminated area thoroughly with water.

**Small Spills:** Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

**7. Handling and Storage**

**Handling**

Keep away from heat, sparks and open flame - No smoking. All equipment used when handling the product must be grounded. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing. Use only with adequate ventilation. Avoid release to the environment. Avoid prolonged exposure.

**Storage**

Keep away from heat and sources of ignition (spark or flame). The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Keep in a well-ventilated place. Keep this material away from food, drink and animal feed. Keep out of the reach of children. Use care in handling/storage.

**8. Exposure Controls / Personal Protection**

**Exposure limits**

**ACGIH**

**Components**

**CAS #**

**TWA**

**STEL**

**Ceiling**

Biobase 300	8012-95-1	5 mg/m3	10 mg/m3	Not established
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**OSHA**

**Components**

**CAS #**

**TWA**

**STEL**

**Celling**

Biobase 300	8012-95-1	5 mg/m3	Not established	Not established
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**Engineering controls**

Ensure adequate ventilation, especially in confined areas. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

**Personal protective equipment**

**Eye / face protection**

Do not get this material in contact with eyes. Wear chemical goggles.

**Skin protection**

Do not get this material in contact with skin. Protective gloves. Impervious gloves. Wear suitable protective clothing.

**Respiratory protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. A NIOSH- approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

**General hygiene considerations**

Do not get this material in your eyes, on your skin, or on your clothing. When using do not eat or drink. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

**9. Physical & Chemical Properties**

<b>Appearance</b>	Liquid.
<b>Color</b>	Dark brown
<b>Odor</b>	Light petroleum.
<b>Odor threshold</b>	Not available
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>pH</b>	Not available
<b>Melting point</b>	32 °F (0 °C) estimated
<b>Freezing point</b>	Not available
<b>Boiling point</b>	215.6 °F (102 °C) estimated
<b>Flash point</b>	> 200 °F (> 93.3 °C)
<b>Evaporation rate</b>	Not available
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available
<b>Flammability limits in air, lower, % by volume</b>	Not available
<b>Vapor pressure</b>	Not available
<b>Vapor density</b>	Not available
<b>Specific gravity</b>	0.94
<b>Relative density</b>	0.9399 g/cm <sup>3</sup> estimated
<b>Solubility (water)</b>	Insoluble
<b>Partition coefficient (n-octanol/water)</b>	Not available
<b>Auto-ignition temperature</b>	Not available
<b>Decomposition temperature</b>	Not available

**10. Chemical Stability & Reactivity Information**

<b>Chemical stability</b>	Stable at normal conditions.
<b>Conditions to avoid</b>	Heat, flames and sparks.
<b>Incompatible materials</b>	Acids.

**11. Toxicological Information**

<b>Acute effects</b>	Acute LD50: 5000 mg/kg estimated, Rat, Oral Acute LD50: 5797 mg/kg estimated, Rat, Dermal Acute LC50: 1220 mg/l/4h estimated, Rat, Inhalation
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**Component analysis - LD50**

**Toxicology Data - Selected LD50s and LC50s**

Biobase 300	8012-95-1	Oral LD50 Mouse: 22 g/kg
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<b>Sensitization</b>	May cause sensitization of susceptible persons.
<b>Local effects</b>	Contact may irritate or burn eyes. Components of the product may be absorbed into the body through the skin.
<b>Chronic effects</b>	Hazardous by OSHA criteria. Prolonged exposure may cause chronic effects.
<b>Carcinogenicity</b>	Suspect cancer hazard. Prolonged and repeated skin contact with some mildly treated or untreated mineral oils have produced skin cancer in laboratory animals.
<b>Epidemiology</b>	Hazardous by OSHA criteria.

### 12. Ecological Information

<b>Ecotoxicity</b>	EC50 21.01 mg/L estimated, Daphnia, 48.00 Hours, Components of this product have been identified as having potential environmental concerns.
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### 13. Disposal Considerations

<b>Disposal instructions</b>	Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.
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### 14. Transport Information

<b>Department of Transportation (DOT) Requirements</b>	Not regulated as dangerous goods.
<b>Canadian Transportation of Dangerous Goods (TDG) Requirements</b>	Not regulated as dangerous goods.
<b>IMDG</b>	Not regulated as dangerous goods.
<b>IATA</b>	Not regulated as dangerous goods.

### 15. Regulatory Information

<b>Labelling</b>	
<b>Contains</b>	Biobase 300
<b>US federal regulations</b>	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.  CERCLA/SARA Hazardous Substances - Not applicable.
<b>U.S. - FDA - Direct Food Additives</b>	
Biobase 300	8012-95-1      21 CFR 172.878, 21 CFR 173.340
<b>Occupational Safety and Health Administration (OSHA)</b>	
<b>29 CFR 1910.1200 hazardous chemical</b>	Yes
<b>CERCLA (Superfund) reportable quantity</b>	
None	

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## 16. Other Information

**HMIS® ratings**

Health: 2\*  
Flammability: 1  
Physical hazard: 0

**NFPA ratings**

Health: 2  
Flammability: 1  
Instability: 0

**Prepared by**

Product Stewardship  
515 Post Oak Blvd  
Houston, TX 77027  
+1-713-968-2306

**Disclaimer**

THIS PRODUCT'S HEALTH AND SAFETY INFORMATION IS PROVIDED TO ASSIST OUR CUSTOMERS IN ASSESSING COMPLIANCE WITH HEALTH, SAFETY AND ENVIRONMENTAL REGULATIONS. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US, AND IS BELIEVED TO BE ACCURATE, ALTHOUGH NO GUARANTEE OR WARRANTY IS PROVIDED OR IMPLIED BY THE COMPANY IN THIS RESPECT. SINCE THE USE OF THIS PRODUCT IS WITHIN THE EXCLUSIVE CONTROL OF THE USER, IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE CONDITIONS OF SAFE USE. SUCH CONDITIONS MUST COMPLY WITH ALL GOVERNMENTAL REGULATIONS.

**Issue date**

July-27-2010

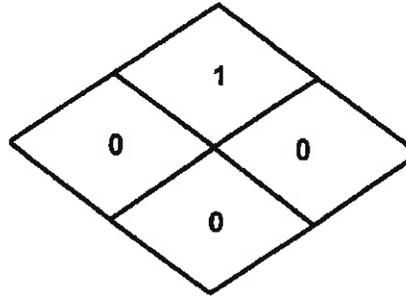
**MSDS sections updated**

Product and Company Identification: Alternate Trade Names  
Physical & Chemical Properties: Color

Integrity Industries, Inc.  
P. O. Box 5342

Kingsville  
361-595-5561  
361-595-5588

TX 78363



## Material Safety Data Sheet

Page 1

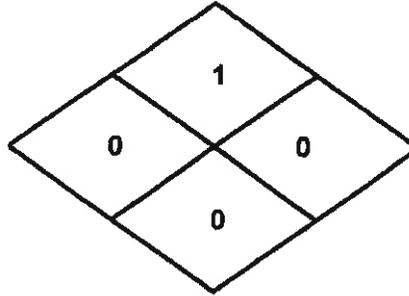
	<b>SECTION 1.0</b>
Revised Date	08/01/2008
Supersedes	02/11/2002
	<b>SECTION 2.0</b>
Trade Name	SYNVERT L-WA
Synonyms/Other Designations	SYNVERT Thinner Wetting Agent
Chemical Formula	Thinner and Wetting Agent for synthetic oil mud
Hazard(s)	Not Hazardous
	<b>SECTION 3.0</b>
Boiling Point	380 - 400 F
Freezing Point	N/A
Specific Gravity	0.98
Vapor Pressure (mm Hg)	N/A
Vapor Density	N/A
Solubility in H2O	Negligible
Appearance	Dark brown viscous liquid
Odor	Bland
	<b>SECTION 4.0</b>
Stability	Stable under normal conditions
Incompatibility	Heat, sparks, open flames
Hazardous Decomposition Products	Combustion may produce oxides of carbon and smoke
Hazardous Polymerizations	Will not occur
	<b>SECTION 5.0</b>
Flash Point	380 F
Extinguishing Media	Water, Dry Chemical, Foam, CO2
Special Fire Fighting Procedures	Normal firefighting procedures
Unusual Fire Hazards	None known
pH	N/A
	<b>SECTION 6.0</b>
Inhalation	Move to well ventilated area, if breathing difficulties persist after 15 minutes, seek medical help
Eye Contact	Wash eye thoroughly for 15 minutes; if irritation persists, seek medical help.
Skin Contact	Wash exposed area with soap & water
Ingestion	Do not induce vomiting, drink water to dilute, seek medical assistance.

Integrity Industries, Inc.  
P. O. Box 5342

Kingsville  
361-595-5561  
361-595-5588

TX

78363



1253 SYNVERT WA - L

### Material Safety Data Sheet

Page 2

Acute	SECTION 7.0 Can irritate eyes, skin, respiratory, and digestive tract.
Chronic	No data available
Accidental Spill Procedures Handling & Storage	SECTION 8.0 Absorb with inert material and dispose of according to local, state, and federal regulations. Store in well ventilated area.
Respiratory Protection	SECTION 9.0 NIOSH approved organic respirator in mist conditions
Ventilation	Desired
Exhaust	Mechanical
Protective Gloves	Rubber gloves
Eye Protection	Safety Glasses, Goggles
Other Protection	Eye wash/Safety shower
DOT Proper Shipping Name	SECTION 10.0 Not Regulated
DOT Hazard Class or Division	Not Hazardous
DOT Identification Number	N/A
DOT Packaging Group	N/A
Type Label(s) Required or Exemption Nu	None
DISCLAIMER	SECTION 11.0 SOME INFORMATION PROVIDED HEREIN WAS DRAWN FROM SOURCES OTHER THAN INTEGRITY INDUSTRIES.
DISCLAIMER	THE INFORMATION PROVIDED HEREIN IS BELIEVED BY INTEGRITY INDUSTRIES TO BE CORRECT AND RELIABLE; NO EXPRESSED OR IMPLIED WARRANTY IS PROVIDED HOWEVER.
DISCLAIMER	INTEGRITY INDUSTRIES ASSUMES NO RESPONSIBILITY AND DENIES ALL LIABILITY FOR ANY LOSS, DAMAGE, OR EXPENSE CONNECTED WITH CUSTOMERS' METHOD OF HANDLING, STORAGE, USE, AND DISPOSAL OF THIS PRODUCT.
DISCLAIMER	THE MSDS INFORMATION PROVIDED HEREIN IS APPLICABLE ONLY TO THIS PRODUCT.

## Material Safety Data Sheet

# SYNVERT TWA



### 1. Product and Company Identification

<b>Material name</b>	<b>SYNVERT TWA</b>
<b>Patent Number</b>	Not available
<b>Revision date</b>	December-14-2010
<b>Version No.</b>	1
<b>CAS #</b>	Mixture
<b>Manufacturer information</b>	INTEGRITY INDUSTRIES INC.
<b>Supplier information</b>	INTEGRITY INDUSTRIES INC. P O BOX 5342 Kingsville, TX 78363
<b>Supplier emergency telephone number(s)</b>	CHEMTREC 1-800-424-9300/361-595-5561

### 2. Hazards Identification

<b>Emergency overview</b>	<b>WARNING</b>  May be ignited by heat, sparks or flames. Harmful by inhalation and if swallowed. Irritating to eyes, respiratory system and skin. Prolonged exposure may cause chronic effects. Components of the product may be absorbed into the body by inhalation, ingestion and through the skin. This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>OSHA regulatory status</b>	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
<b>Potential health effects</b>	
<b>Routes of exposure</b>	Skin contact. Inhalation.
<b>Eyes</b>	Eye contact may result in corneal injury. Do not get this material in contact with eyes. Contact may irritate or burn eyes.
<b>Skin</b>	Irritating to skin. Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash). Do not get this material in contact with skin.
<b>Inhalation</b>	Do not breathe vapor. Prolonged inhalation may be harmful. Irritating to respiratory system.
<b>Ingestion</b>	May cause delayed lung damage. Do not ingest. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Components of the product may be absorbed into the body by ingestion.
<b>Target organs</b>	Eyes. Lungs. Respiratory system. Skin.
<b>Chronic effects</b>	Shortness of breath. Conjunctiva. May cause delayed lung damage. Prolonged skin contact may defat the skin and produce dermatitis.

**Signs and symptoms** Discomfort in the chest. Shortness of breath. Corneal damage. Cough. Conjunctivitis. Defatting of the skin. Rash. Irritation.

**Potential environmental effects** May cause long-term adverse effects in the environment.

### 3. Composition / Information on Ingredients

Components	CAS #	Percent
Biobase 300	8012-95-1	65 - 100
2-Ethylhexanol	104-76-7	3 - 7

### 4. First Aid Measures

**First aid procedures**

**Eye contact** If in eyes, rinse with water for 15 minutes. Get medical attention immediately.

**Skin contact** Remove and isolate contaminated clothing and shoes. Wash off with warm water and soap. Get medical attention if irritation develops or persists.

**Inhalation** Move to fresh air. If breathing is difficult, give oxygen.

**Ingestion** Do not induce vomiting without medical advice. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

**Notes to physician**

Symptoms may be delayed.

**General advice**

Call a physician if symptoms develop or persist. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

### 5. Fire Fighting Measures

**Extinguishing media**

**Suitable extinguishing media** Water. Water fog. Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Unsuitable extinguishing media** Do not use a solid water stream as it may scatter and spread fire.

**Protection of firefighters**

**Protective equipment and precautions for firefighters** Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Move containers from fire area if you can do it without risk. Do not scatter spilled material with high pressure water streams. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

### 6. Accidental Release Measures

**Personal precautions**

Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.



**Methods for containment**

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

**Methods for cleaning up**

Should not be released into the environment.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

**7. Handling and Storage**

**Handling**

Keep away from sources of ignition - No smoking. Do not breathe vapors or spray mist. Use only with adequate ventilation. Avoid contact with skin, eyes and clothing. Avoid prolonged exposure. Wash thoroughly after handling. Avoid release to the environment.

**Storage**

Keep away from heat and sources of ignition (spark or flame). Store in a closed container away from incompatible materials. Keep in a well-ventilated place. Use care in handling/storage.

**8. Exposure Controls / Personal Protection**

**Exposure limits**

**ACGIH**

**Components**

**CAS #**

**TWA**

**STEL**

**Ceiling**

Biobase 300	8012-95-1	5 mg/m3	10 mg/m3	Not established
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**OSHA**

**Components**

**CAS #**

**TWA**

**STEL**

**Ceiling**

Biobase 300	8012-95-1	5 mg/m3	Not established	Not established
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**Engineering controls**

Ensure adequate ventilation, especially in confined areas.

**Personal protective equipment**

**Eye / face protection**

Do not get this material in contact with eyes. Wear chemical goggles.

**Skin protection**

Do not get this material in contact with skin. Protective gloves. Impervious gloves. Wear appropriate chemical resistant clothing.

**Respiratory protection**

Wear positive pressure self-contained breathing apparatus (SCBA). When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

**General hygiene considerations**

Do not get this material in contact with eyes. Do not get this material in contact with skin. When using do not eat or drink. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

**9. Physical & Chemical Properties**

**Appearance**

Dark liquid.

<b>Color</b>	Dark brown
<b>Odor</b>	Bland.
<b>Odor threshold</b>	Not available
<b>Physical state</b>	Liquid.
<b>Form</b>	Viscous liquid.
<b>pH</b>	Not available
<b>Melting point</b>	30.2 °F (-1.33 °C) estimated
<b>Freezing point</b>	Not available
<b>Boiling point</b>	390 - 400 °F (198.9 - 204.4 °C)
<b>Flash point</b>	220 °F (104.4 °C)
<b>Evaporation rate</b>	Not available
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	0.2134 %
<b>Flammability limits in air, lower, % by volume</b>	0.0317 %
<b>Vapor pressure</b>	Not available
<b>Vapor density</b>	Not available
<b>Specific gravity</b>	0.98
<b>Relative density</b>	0.9799 g/cm <sup>3</sup> estimated
<b>Solubility (water)</b>	Not available
<b>Partition coefficient (n-octanol/water)</b>	Not available
<b>Auto-ignition temperature</b>	Not available
<b>Decomposition temperature</b>	Not available
<b>VOC</b>	4.73 % estimated

### 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	Stable at normal conditions.
<b>Conditions to avoid</b>	Heat, flames and sparks.
<b>Incompatible materials</b>	Acids.
<b>Hazardous decomposition products</b>	Smoke Carbon oxides.

### 11. Toxicological Information

<b>Acute effects</b>	Acute LD50: 7604 mg/kg estimated, Rat, Oral Acute LD50: 3226 mg/kg estimated, Rat, Dermal Acute LC50: 711 mg/l/4h estimated, Rat, Inhalation
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#### Component analysis - LD50

##### Toxicology Data - Selected LD50s and LC50s

2-Ethylhexanol	104-76-7	Oral LD50 Rat: 1516-2774 mg/kg
Biobase 300	8012-95-1	Oral LD50 Mouse: 22 g/kg

**Sensitization** Not expected to be hazardous by OSHA criteria.

**Local effects** Contact may irritate or burn eyes. Irritating to skin. Irritating to respiratory system. Components of the product may be absorbed into the body through the skin.

<b>Chronic effects</b>	Hazardous by OSHA criteria. Prolonged or repeated exposure may cause lung injury. Prolonged exposure may cause chronic effects.
<b>Carcinogenicity</b>	Not expected to be hazardous by OSHA criteria.
<b>Neurological effects</b>	Not expected to be hazardous by OSHA criteria.
<b>Epidemiology</b>	Hazardous by OSHA criteria.

## 12. Ecological Information

**Ecotoxicity** EC50 12.21 mg/L estimated, Daphnia, 48.00 Hours, Components of this product have been identified as having potential environmental concerns.

**Ecotoxicity - Freshwater Algae Data**

2-Ethylhexanol 104-76-7 72 Hr EC50 Scenedesmus subspicatus: 11.5 mg/L

**Ecotoxicity - Freshwater Fish Species Data**

2-Ethylhexanol 104-76-7 96 Hr LC50 Oncorhynchus mykiss: 32 mg/L [static]; 96 Hr LC50 Pimephales promelas: 27-29.5 mg/L [flow-through]; 96 Hr LC50 Pimephales promelas: 29.7 mg/l [static]

**Ecotoxicity - Water Flea Data**

2-Ethylhexanol 104-76-7 48 Hr EC50 Daphnia magna: 39 mg/L

**Environmental effects**

**Ecotoxicity - Freshwater Algae Data**

2-Ethylhexanol 104-76-7 72 Hr EC50 Scenedesmus subspicatus: 11.5 mg/L

**Ecotoxicity - Freshwater Fish Species Data**

2-Ethylhexanol 104-76-7 96 Hr LC50 Oncorhynchus mykiss: 32 mg/L [static]; 96 Hr LC50 Pimephales promelas: 27-29.5 mg/L [flow-through]; 96 Hr LC50 Pimephales promelas: 29.7 mg/l [static]

**Ecotoxicity - Water Flea Data**

2-Ethylhexanol 104-76-7 48 Hr EC50 Daphnia magna: 39 mg/L

## 13. Disposal Considerations

**Disposal Instructions** Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

## 14. Transport Information

**Department of Transportation (DOT) Requirements**

Not regulated as hazardous goods.

**Department of Transportation (DOT) Requirements**

Not regulated as dangerous goods.

**Canadian Transportation of Dangerous Goods (TDG) Requirements**

Not regulated as hazardous goods.

**Canadian Transportation of Dangerous Goods (TDG) Requirements**

Not regulated as dangerous goods.

**IMDG**

Not regulated as hazardous goods.



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**IMDG**

Not regulated as dangerous goods.

**IATA**

Not regulated as hazardous goods.

**IATA**

Not regulated as dangerous goods.

<b>15. Regulatory Information</b>
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**Labelling****Contains** 2-Ethylhexanol, Biobase 300**US federal regulations**This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.  
CERCLA/SARA Hazardous Substances - Not applicable.**FEMA (Flavor and Extract Manufacturers Association) - FEMA Numbers**

2-Ethylhexanol 104-76-7 3151

**U.S. - FDA - Direct Food Additives**

Biobase 300 8012-95-1 21 CFR 172.878, 21 CFR 173.340

**Occupational Safety and Health Administration (OSHA)****29 CFR 1910.1200 hazardous chemical** Yes**CERCLA (Superfund) reportable quantity**

None

**Superfund Amendments and Reauthorization Act of 1986 (SARA)****Hazard categories** Immediate Hazard - Yes  
Delayed Hazard - Yes  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No**Section 302 extremely hazardous substance** No**Section 311 hazardous chemical** Yes

**Inventory status**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**International regulations**

**Canada - WHMIS - Ingredient Disclosure List**

2-Ethylhexanol	104-76-7	1 %
Biobase 300	8012-95-1	1 %

**State regulations**

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**U.S. - Massachusetts - Right To Know List**

2-Ethylhexanol	104-76-7	Present
Biobase 300	8012-95-1	Present (mist)

**U.S. - Minnesota - Hazardous Substance List**

Biobase 300	8012-95-1	Carcinogen
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**U.S. - New Jersey - Right to Know Hazardous Substance List**

Biobase 300	8012-95-1	sn 1437
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**U.S. - Pennsylvania - RTK (Right to Know) List**

2-Ethylhexanol	104-76-7	Present
Biobase 300	8012-95-1	Present

**U.S. - Rhode Island - Hazardous Substance List**

Biobase 300	8012-95-1	Flammable; Toxic
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**U.S. - Texas - Effects Screening Levels - Long Term**

2-Ethylhexanol	104-76-7	14 ppb ESL (odor); 74 µg/m3 ESL (odor)
Biobase 300	8012-95-1	5 µg/m3 ESL (mist)

**U.S. - Texas - Effects Screening Levels - Short Term**

2-Ethylhexanol	104-76-7	140 ppb ESL (odor); 740 µg/m3 ESL (odor)
Biobase 300	8012-95-1	50 µg/m3 ESL (mist)

**16. Other Information**

**HMIS® ratings**

Health: 2\*  
 Flammability: 1  
 Physical hazard: 0

**NFPA ratings**

Health: 2  
 Flammability: 1  
 Instability: 0



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**Prepared by**

Product Stewardship  
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**Disclaimer**

THIS PRODUCT'S HEALTH AND SAFETY INFORMATION IS PROVIDED TO ASSIST OUR CUSTOMERS IN ASSESSING COMPLIANCE WITH HEALTH, SAFETY AND ENVIRONMENTAL REGULATIONS. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US, AND IS BELIEVED TO BE ACCURATE, ALTHOUGH NO GUARANTEE OR WARRANTY IS PROVIDED OR IMPLIED BY THE COMPANY IN THIS RESPECT. SINCE THE USE OF THIS PRODUCT IS WITHIN THE EXCLUSIVE CONTROL OF THE USER, IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE CONDITIONS OF SAFE USE. SUCH CONDITIONS MUST COMPLY WITH ALL GOVERNMENTAL REGULATIONS.

**Issue date**

December-14-2010

**ATTACHMENT I**  
**EMISSION UNITS TABLE**



**ATTACHMENT J**

**EMISSION POINTS DATA SUMMARY SHEET**

**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 Ventilated 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> (Speciate 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			
TP1	Point Source	TP-1	Manual Bag Dump Stations	N	None	NA	NA	PM PM10 PM2.5	0.61 0.29 0.04	0.06 0.03 0.01	0.61 0.29 0.04	0.06 0.03 0.01	Solid	AP-42	NA
1E	Point Source	TP2 A&B	Pneumatic Transfer of Barite to Silo	1C/2C	Filter Bag	NA	NA	PM PM10 PM2.5	36.50 36.50 36.50	0.37 0.37 0.37	1.83 1.83 1.83	0.02 0.02 0.02	Solid	AP-42	NA
2E	Point Source	TP3 A&B	Pneumatic Transfer of Barite to Mixers	1C/2C	Filter Bag	NA	NA	PM PM10 PM2.5	36.50 36.50 36.50	0.37 0.37 0.37	1.83 1.83 1.83	0.02 0.02 0.02	Solid	AP-42	NA
1E	Point Source	MT1	Synthetic Mud Mixer	NA	NA	NA	NA	VOC	0.85	0.02	0.85	0.02	Vapor	Tanks 4	NA
2E	Point Source	MT2	Diesel Mud Mixer	NA	NA	NA	NA	VOC	0.85	0.02	0.85	0.02	Vapor	Tanks 4	NA
TK1-16	Point Source	TK1-16	Synthetic Mud Tanks	NA	NA	NA	NA	VOC	1.22	0.02	1.22	0.02	Vapor	Tanks 4	NA
TK17-19	Point Source	TK17-19	Synthetic Base Oil Tanks	NA	NA	NA	NA	VOC	0.94	0.02	0.94	0.02	Vapor	Tanks 4	NA
TK20-21	Point Source	TK20-21	CaCL Tanks	NA	NA	NA	NA	Not A Source							
TK22-27	Point Source	TK22-27	Diesel Mud Tanks	NA	NA	NA	NA	VOC	1.22	0.02	1.22	0.02	Vapor	Tanks 4	NA
TK28-30	Point Source	TK28-30	Diesel Tanks	NA	NA	NA	NA	VOC	1.22	0.02	1.22	0.02	Vapor	Tanks 4	NA
TK31	Point Source	TK31	Water Tank	NA	NA	NA	NA	Not a Source							

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>  (Speciate 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>4</sup> )
		ID No.	Source	ID No.	Device Type	Short Term <sup>2</sup>	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
Truck	Truck	Truck	Truck	NA	NA	NA	NA	VOC	0.63	0.03	0.63	0.03	Vapor	Tanks 4.0	NA

See Attachment K for Fugitive Emissions.

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.

<sup>1</sup> Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

<sup>2</sup> 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).

<sup>3</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>4</sup> 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).

<sup>5</sup> 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).

<sup>6</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).

<sup>7</sup> 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 K**

**FUGITIVE EMISSIONS DATA SUMMARY SHEET**

## 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 type="checkbox"/> Yes <input checked="" 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 <sup>1</sup> 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							
Unpaved Haul Roads		PM PM10 PM2.5	22.94 6.77 0.68	15.14 4.47 0.45	22.94 6.77 0.68	15.14 4.47 0.45	AP-42
Storage Pile Emissions							
Loading/Unloading Operations							
Wastewater Treatment Evaporation & Operations							
Equipment Leaks							
General Clean-up VOC Emissions							
Other							

<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>, etc. DO NOT LIST CO<sub>2</sub>, 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 L**  
**EMISSION UNIT DATA SHEETS**

**Attachment L  
EMISSIONS UNIT DATA SHEET  
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): MT1

1. Name or type and model of proposed affected source:

Synthetic Mud Mixer

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

See Attachment G for description of mixture.

4. Name(s) and maximum amount of proposed material(s) produced per hour:

Mixed synthetic drilling mud.

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

NA

\* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable): NA

(a) Type and amount in appropriate units of fuel(s) to be burned:

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@

°F and

psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input:

× 10<sup>6</sup> BTU/hr.

7. Projected operating schedule:

Hours/Day 24

Days/Week 7

Weeks/Year 52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@	°F and	psia		
a. NO <sub>x</sub>	NA	lb/hr	NA	grains/ACF
b. SO <sub>2</sub>	NA	lb/hr	NA	grains/ACF
c. CO	NA	lb/hr	NA	grains/ACF
d. PM <sub>10</sub>	36.50 (when pneumatic system is operating)	lb/hr	NA	grains/ACF
e. Hydrocarbons	NA	lb/hr	NA	grains/ACF
f. VOCs	0.85	lb/hr	NA	grains/ACF
g. Pb	NA	lb/hr	NA	grains/ACF
h. Specify other(s)				
None		lb/hr		grains/ACF
		lb/hr		grains/ACF
		lb/hr		grains/ACF
		lb/hr		grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

**9. 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**  
 None proposed.

**RECORDKEEPING**  
 Record amount of synthetic drilling mud manufactured at the site. The value recorded will be the amount sold for each month.

**REPORTING**  
 None proposed.

**TESTING**  
 None proposed.

**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 OPERATION/AIR POLLUTION CONTROL DEVICE.

**RECORDKEEPING.** PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

**REPORTING.** PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

**TESTING.** PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

**10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty**  
 None

**Attachment L  
EMISSIONS UNIT DATA SHEET  
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): MT2

<p>1. Name or type and model of proposed affected source:</p> <p>Diesel Mud Mixer</p>
<p>2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.</p>
<p>3. Name(s) and maximum amount of proposed process material(s) charged per hour:</p> <p>See Attachment G for description of mixture.</p>
<p>4. Name(s) and maximum amount of proposed material(s) produced per hour:</p> <p>Mixed drilling mud.</p>
<p>5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:</p> <p>NA</p>

\* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable): NA

(a) Type and amount in appropriate units of fuel(s) to be burned:

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@

°F and

psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input:

$\times 10^6$  BTU/hr.

7. Projected operating schedule:

Hours/Day 24

Days/Week 7

Weeks/Year 52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@		°F and		psia
a.	NO <sub>x</sub>	NA	lb/hr	NA grains/ACF
b.	SO <sub>2</sub>	NA	lb/hr	NA grains/ACF
c.	CO	NA	lb/hr	NA grains/ACF
d.	PM <sub>10</sub>	36.50 (when pneumatic system is operating)	lb/hr	NA grains/ACF
e.	Hydrocarbons	NA	lb/hr	NA grains/ACF
f.	VOCs	0.85	lb/hr	NA grains/ACF
g.	Pb	NA	lb/hr	NA grains/ACF
h.	Specify other(s)			
	None		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. 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**

None proposed.

**RECORDKEEPING**

Record amount of drilling mud manufactured at the site. The value recorded will be the amount sold for each month.

**REPORTING**

None proposed.

**TESTING**

None proposed.

**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 OPERATION/AIR POLLUTION CONTROL DEVICE.

**RECORDKEEPING.** PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

**REPORTING.** PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

**TESTING.** PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

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

None

## STORAGE TANK AFFECTED SOURCE SHEET

(from Hot Mix Asphalt Plants G20-B Application)

Source Identification Number <sup>1</sup>	Content <sup>2</sup>	Length/ Height <sup>3</sup> (ft)	Dia <sup>4</sup> (ft)	Volume <sup>5</sup> (gallons)	Throughput <sup>6</sup> (gal/yr)	Orientation <sup>7</sup>	Liquid Height <sup>8</sup> (ft)
TK1-16	Synthetic Mud Hold Tanks	20	12	21,000 (500 BBL)	500,000	Vertical	19.5
TK17-19	Synthetic Oil Storage Tanks	20	12	(1) 21,000 (500 BBL) (2) 16,170 (385 BBL)	500,000	Vertical	19.5
TK20-21	CaCl Tank	Not a Source					
TK22-27	Diesel Mud Hold Tanks	20	12	21,000 (500 BBL)	500,000	Vertical	19.5
TK28-30	Diesel Storage Tanks	20	12	21,000 (500 BBL)	500,000	Vertical	19.5
TK31	Water Storage	Not a Source					
Truck*	Mixed Mud	NA	NA	5,460 (130BBL)	500,000	Horizontal	NA
BRS1	Barite	NA	NA	100 tons	1,000 tpy	Vertical	NA
BRS2	Barite	NA	NA	100 tons	1,000 tpy	Vertical	NA

\*Truck is the tank on the trucks being filled with synthetic or diesel based muds.

1. Enter the appropriate Source Identification Number for each storage tank located at the hot mix asphalt plant.  
Storage tanks should be designated T-1, T-2, T-3, etc.
2. Enter storage tank content (#2 fuel oil, asphaltic cement, water, etc.)
3. Enter storage tank length in feet.
4. Enter storage tank diameter in feet.
5. Enter storage tank volume in gallons. Storage tank volume may be calculated using the following mathematical relationship:  
(length of tank) X (area conversion) X (tank diameter)<sup>2</sup> X (liquid volume conversion) or,  
(L<sub>tank</sub> ft) X (3.14/4) X (d<sub>tank</sub><sup>2</sup> ft<sup>2</sup>) X (7.48 gallons/ft<sup>3</sup>)
6. Enter storage tank throughput in gallons per year.
7. Enter storage tank orientation using the following codes:  
VERT Vertical Tank      HORZ Horizontal Tank
8. Enter storage tank average liquid height in feet.
9. Storage tank emissions may be calculated using TANKS emission calculation program.

## Attachment L FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

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

		PM	PM-10
k =	Particle size multiplier	4.9	1.5
s =	Silt content of road surface material (%)	10	10
p =	Number of days per year with precipitation >0.01 in.	157	157

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	Trucks	10-18	40	NA	0.5	5	500	NA	0
2	Loader	4	120	NA	0.25	1	8,760	NA	0
3									
4									
5									
6									
7									
8									

Source: AP-42 Fifth Edition – 13.2.2 Unpaved Roads

$$E = k \times 5.9 \times (s + 12) \times (S + 30) \times (W + 3)^{0.7} \times (w + 4)^{0.5} \times ((365 - p) + 365) =$$

lb/Vehicle Mile Traveled (VMT)

Where:

		PM	PM-10
k =	Particle size multiplier	See Attachment N	
s =	Silt content of road surface material (%)		
S =	Mean vehicle speed (mph)		
W =	Mean vehicle weight (tons)		
w =	Mean number of wheels per vehicle		
p =	Number of days per year with precipitation >0.01 in.		

For lb/hr:  $[(lb + VMT) \times [VMT + trip] \times [Trips + Hour] =$  lb/hr

For TPY:  $[(lb + VMT) \times [VMT + trip] \times [Trips + Hour] \times [Ton + 2000 lb] =$  Tons/year

### SUMMARY OF UNPAVED HAULROAD EMISSIONS (See Attachment N for PM2.5)

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	19.71	0.99	19.71	0.99	5.82	0.29	5.82	0.29
2	3.23	14.15	3.23	14.15	0.95	4.18	0.95	4.18
3								
4								
5								
6								
7								
8								
<b>TOTALS</b>	22.94	15.14	22.94	15.14	6.77	4.47	6.77	4.47

**ATTACHMENT M**

**AIR POLLUTION CONTROL DEVICE SHEET(S)**



22. Type of Pollutant(s) to be collected (if particulate give specific type):  
 Barite particulate when the silo is being filled and when the mixer is being provided barite.

23. Is there any SO<sub>3</sub> in the emission stream?  No  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/ PM10/PM2.5*	36.50	NA	1.83	NA
*PM,PM10, and PM2.5 Assumed Equal.				

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	90% greater than 5 microns and 1% net less than 0.5 microns.	99-99.75
2 – 4		
4 – 6		
6 – 8		
8 – 10		
10 – 12		
12 – 16		
16 – 20		
20 – 30		
30 – 40		
40 – 50		
50 – 60		
60 – 70		
70 – 80		
80 – 90		
90 – 100		95%
>100		

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: Visual observation for leaks.

27. Describe any recording device and frequency of log entries:

None

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:

Filter bags are replaced as needed. The used filter bags are disposed.

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: None

RECORDKEEPING: Keep a record of the date the filter bags are replaced.

REPORTING: None

TESTING: None

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.  
100%, Estimated efficiency as the filter bag is on the exhaust point from the mixers.

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.  
95%, Estimated based on baghouse control.

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.  
None. Filter bags are expected to operate at ambient conditions to control pneumatic transfer venting of material from the mixers.



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### **Filtration Efficiency for IAC Systems Fabric Filter Pulse Jet Dust Collectors**

IAC Systems, Inc., expects that our equipment performance, if operated in accordance with IAC's stated operating and maintenance procedures, and within prestated system operating conditions; at a pressure differential of not less than 2.5" W.C. and not greater than 4.5" W.C., shall typically provide an emission efficiency rate not to exceed .02 grs per SCF. Measurement of outlet emission grains shall be an average taken at selected intervals over a 24 hour time continuum based on a gas stream particulate micron size range of 90% greater than 5 microns and 1% not less than 0.5 micron.

---

# PRODUCT SPECIFICATIONS

PROPERTY	DESCRIPTION	TEST METHOD
<b>MATERIAL: POLYESTER FELT 16 OZ PLAIN PRODUCT NUMBER 2325-321</b>		
FIBER CONTENT:	100% POLYESTER, 2.25 DENIER	ASTM D276
WEIGHT: [OZ./SQ. YD.]	15.0-17.0	ASTM D461
PERMEABILITY: [CFM/SQ.FT. @ 0.5" w.g.]	25-35	ASTM D737
CONSTRUCTION:	UNSUPPORTED	VISUAL
THICKNESS: (INCHES)	.065	ASTM D1777
MULLEN BURST: [PSI]	400	ASTM D1682
TENSILE STRENGTH: [LBS./ 2"]		ASTM D1682
MD	200	
CMD	250	
ELONGATION:		
MD		
CMD		
THERMAL STABILITY: [1 HR. AT 302°F]	MD 2.0% CMD 2.0%	
FINISH:	PLAIN	

**ATTACHMENT N**  
**SUPPORTING EMISSIONS CALCULATIONS**

By: PEW  
 Date: 10/25/2015

Checked By: JJD  
 Date: 10/26/2015

**Proposed PTE**

**Point Sources**

Source Description	Regulated Air Pollutant	Uncontrolled		Controlled	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)
Transfer Points	PM	73.61	0.80	4.27	0.10
	PM10	73.29	0.77	3.95	0.07
	PM2.5	73.04	0.74	3.70	0.04
Tanks/Mixers	VOC	6.93	0.15	6.93	0.15

**Fugitive Sources**

Source Description	Regulated Air Pollutant	Uncontrolled		Controlled	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)
Vehicular Traffic	PM	22.94	15.14	22.94	15.14
	PM10	6.77	4.47	6.77	4.47
	PM2.5	0.68	0.45	0.68	0.45

**Total**

Regulated Air Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
PM	96.55	15.94	27.21	15.24
PM10	80.06	5.24	10.72	4.54
PM2.5	73.72	1.19	4.38	0.49
VOC	6.93	0.15	6.93	0.15

By: PEW  
Date: 10/25/2015

Checked By: JJD  
Date: 10/26/2015

**Material Transfers**

**Particulate Matter (PM)**

Rounding to = 2

ID	Transfer Capacity		Moisture Content (M) (%)	Emission Factor (lb/ton)	Control Device		PM			
	(tph)	(tpy)			Type	Effic(%)	Uncontrolled		Controlled	
							(lb/hr)	(tpy)	(lb/hr)	(tpy)
TP1 (1)	2.5	500	0.1	0.2431	N	0	0.61	0.06	0.61	0.06
TP2A&B (2)	50	1,000	NA	0.73	BAG	95	36.50	0.37	1.83	0.02
TP3A&B (2)	50	1,000	NA	0.73	BAG	95	36.50	0.37	1.83	0.02
<b>Crusher Transfer Total PM</b>							<b>73.61</b>	<b>0.80</b>	<b>4.27</b>	<b>0.10</b>

**Particulate Matter less than 10 Microns (PM10)**

ID	Transfer Capacity		Moisture Content (M) (%)	Emission Factor (lb/ton)	Control Device		PM10			
	(tph)	(tpy)			Type	Effic(%)	Uncontrolled		Controlled	
							(lb/hr)	(tpy)	(lb/hr)	(tpy)
TP1 (1)	2.5	500	0.1	0.1150	N	0	0.29	0.03	0.29	0.03
TP2A&B (2)	50	1,000	NA	0.73	BAG	95	36.50	0.37	1.83	0.02
TP3A&B (2)	50	1,000	NA	0.73	BAG	95	36.50	0.37	1.83	0.02
<b>Crusher Transfer Total PM10</b>							<b>73.29</b>	<b>0.77</b>	<b>3.95</b>	<b>0.07</b>

**Particulate Matter less than 2.5 Microns (PM2.5)**

ID	Transfer Capacity		Moisture Content (M) (%)	Emission Factor (lb/ton)	Control Device		PM2.5			
	(tph)	(tpy)			Type	Effic(%)	Uncontrolled		Controlled	
							(lb/hr)	(tpy)	(lb/hr)	(tpy)
TP1 (1)	2.5	500	0.1	0.0174	N	0	0.04	0.00	0.04	0.00
TP2A&B (2)	50	1,000	NA	0.73	BAG	95	36.50	0.37	1.83	0.02
TP3A&B (2)	50	1,000	NA	0.73	BAG	95	36.50	0.37	1.83	0.02
<b>Crusher Transfer Total PM2.5</b>							<b>73.04</b>	<b>0.74</b>	<b>3.70</b>	<b>0.04</b>

**Notes:**

1. Emission for manual transfer of aged materials into a hopper. Emissions based on AP-42 Fifth Edition, Section 13.2.4, Aggregate Handling and Storage Piles with the following input and resulting emission factors.

Emission factor equation:  $E = k (0.0032) (U/5)^{1.3} / (M/2)^{1.4}$

E =	PM	PM10	PM2.5	
	?	?	?	lb/ton
k =	0.74	0.35	0.053	dimensionless, particle size multiplier
U =	7	7	7	mph, mean wind speed
M =	?	?	?	%, moisture content

2. Emissions for pneumatic transfer of material based on AP-42 Section 11.12, Table 11-12-2. PM, PM10, and PM2.5 are assumed to be equal.

By: PEW  
Date: 10/25/2015

Checked By: JJD  
Date: 10/26/2015

**Tanks and Mixer - VOC**

Emissions from the tanks are based on a 500 Barrel (BBL) diesel tank and prorated to the actual size of the tanks. This estimate is used for synthetic oil storage, synthetic oil based mud storage, diesel storage, diesel based mud storage, mixers, and truck loading conservatively assuming each tank has the same vapor to release. Tanks 4.0.9d was run for a 500 BBL tank with one turnover per year for a conservative estimate. 500,000 gallons of mixed mud will be produced annually and will include both synthetic oil based mud, diesel based mud, and will also involve reusing hauled back mud. The number of yearly turnovers is based on the size of each mixer and tank assuming that all 500,000 gallons of material (estimated as diesel even though some are mixed mud) will pass through the set of tanks or mixers. Hourly emissions are estimated based on the shown number of turnover/fillings from each source in one hour.

Max Throughput = 500,000 gallons per year  
Gallons per BBL = 42 gallons/BBL  
Emission Factor = 1.22 lb VOC/Turnover

ID	No. of Tanks	Tank Capacity		No. of Turnovers per Tank		VOC (1)	
		BBL	Gallons	Per Hour	Per Year	lb/hr	tpy
Synthetic Base Oil 1-3 (2)	3	385	16,170	1	31	0.94	0.02
Synthetic Mixer	1	350	14,700	1	35	0.85	0.02
Synthetic Mud Tanks 1-16	16	500	21,000	1	24	1.22	0.02
Diesel 1-3	3	500	21,000	1	24	1.22	0.02
Diesel Mixer	1	350	14,700	1	35	0.85	0.02
Diesel Mud Tanks 1-6	6	500	21,000	1	24	1.22	0.02
Truck (Loading)	NA	130	5,460	2	92	0.63	0.03
Total						6.93	0.15

Notes

1. Rounded up to 2 decimal places.
2. Two synthetic base oil tanks are 385 BBL and one is 500 BBL. The 385 BBL is used to estimate maximum turnovers.

By: PEW  
Date: 10/25/2015

Checked By: JJD  
Date: 10/26/2015

**Truck Traffic - Unpaved**

**Emission factor equation:**

$$E = k(s/12)^a (W/3)^b ((365-p)/365)$$

From AP-42 Fifth Edition, Section 13.2.2, Fugitive Sources

	PM	PM10	PM2.5	
E =	?	?	?	lb/VMT
k =	4.9	1.5	0.15	particle size multiplier
a =	0.7	0.9	0.9	constant
b =	0.45	0.45	0.45	constant
s =	10	10	10	% silt in road surface
W <sub>truck</sub> =	80,000	80,000	80,000	pounds
W <sub>truck</sub> =	40	40	40	mean vehicle weight
p =	157	157	157	# days with 0.01" rain
E =	7.88	2.33	0.23	lb/VMT

Rounding to = 2

Vehicular Traffic		Number of Trips/Hour (trips/hour)	Number of Trips/Year (trips/year)	Control Device		TSP Emissions			
ID	Miles/Trip (miles)			Type	Effic(%)	Uncontrolled		Controlled	
						(lb/hr)	(tpy)	(lb/hr)	(tpy)
Trucks	0.5	5	500	N	0	19.71	0.99	19.71	0.99
						19.71	0.99	19.71	0.99

Vehicular Traffic		Number of Trips/Hour (trips/hour)	Number of Trips/Year (trips/year)	Control Device		PM10 Emissions			
ID	Miles/Trip (miles)			Type	Effic(%)	Uncontrolled		Controlled	
						(lb/hr)	(tpy)	(lb/hr)	(tpy)
Trucks	0.5	5	500	N	0	5.82	0.29	5.82	0.29
						5.82	0.29	5.82	0.29

Vehicular Traffic		Number of Trips/Hour (trips/hour)	Number of Trips/Year (trips/year)	Control Device		PM2.5 Emissions			
ID	Miles/Trip (miles)			Type	Effic(%)	Uncontrolled		Controlled	
						(lb/hr)	(tpy)	(lb/hr)	(tpy)
Trucks	0.5	5	500	N	0	0.58	0.03	0.58	0.03
						0.58	0.03	0.58	0.03

Typical number of trucks per month is 25 trucks with 15 vacuum trucks and 10 flatbed trucks which is 300 trucks per year. Emissions based on 500 trucks per year, 5 trucks per hour, and trucks not exceeding 80,000 pounds (in and out).

By: PEW  
 Date: 10/25/2015

Checked By: JJD  
 Date: 10/26/2015

**Loader Traffic - Unpaved**

**Emission factor equation:**

$$E = k(s/12)^a (W/3)^b ((365-p)/365)$$

From AP-42 Fifth Edition, Section 13.2.2, Fugitive Sources

	PM	PM10	PM2.5	
E =	?	?	?	lb/VMT
k =	4.9	1.5	0.15	particle size multiplier
a =	0.7	0.9	0.9	constant
b =	0.45	0.45	0.45	constant
s =	10	10	10	% silt in road surface
Wloader =	120	120	120	mean vehicle weight
p =	157	157	157	# days with 0.01" rain
Eloader =	<b>12.93</b>	<b>3.82</b>	<b>0.38</b>	lb/VMT

Rounding to = 2

Vehicular Traffic		Number of Trips/Hour* (trips/hour)	Number of Trips/Year* (trips/year)	Control Device		TSP Emissions			
ID	Miles/Trip* (miles)			Type	Effic(%)	Uncontrolled		Controlled	
						(lb/hr)	(tpy)	(lb/hr)	(tpy)
Loader	0.25	1	8,760	N	0	3.23	14.15	3.23	14.15
						<b>3.23</b>	<b>14.15</b>	<b>3.23</b>	<b>14.15</b>

Vehicular Traffic		Number of Trips/Hour* (trips/hour)	Number of Trips/Year* (trips/year)	Control Device		PM10 Emissions			
ID	Miles/Trip* (miles)			Type	Effic(%)	Uncontrolled		Controlled	
						(lb/hr)	(tpy)	(lb/hr)	(tpy)
Loader	0.25	1	8,760	N	0	0.95	4.18	0.95	4.18
						<b>0.95</b>	<b>4.18</b>	<b>0.95</b>	<b>4.18</b>

Vehicular Traffic		Number of Trips/Hour* (trips/hour)	Number of Trips/Year* (trips/year)	Control Device		PM2.5 Emissions			
ID	Miles/Trip* (miles)			Type	Effic(%)	Uncontrolled		Controlled	
						(lb/hr)	(tpy)	(lb/hr)	(tpy)
Loader	0.25	1.00	8,760	N	0	0.10	0.42	0.10	0.42
						<b>0.10</b>	<b>0.42</b>	<b>0.10</b>	<b>0.42</b>

\* - Assumes a loader is used to unload/load pallets and totes from/to trucks and the loader travels 0.25 miles per hour for the entire year of 8,760 hours (or 8,760 trips) per year.

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: 500 BBL Diesel Tank  
City: Charleston  
State: West Virginia  
Company: Integrity Industries, Inc.  
Type of Tank: Vertical Fixed Roof Tank  
Description: Diesel is used to estimate the emissions from the synthetic oil, synthetic oil based mud, diesel based mud, and diesel tanks being utilized.

**Tank Dimensions**

Shell Height (ft):	20.00
Diameter (ft):	12.00
Liquid Height (ft):	19.50
Avg. Liquid Height (ft):	18.00
Volume (gallons):	16,497.58
Turnovers:	1.00
Net Throughput(gal/yr):	16,497.58
Is Tank Heated (y/n):	N

**Paint Characteristics**

Shell Color/Shade:	Gray/Medium
Shell Condition:	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

**Roof Characteristics**

Type:	Dome
Height (ft)	0.50
Radius (ft) (Dome Roof)	12.00

**Breather Vent Settings**

Vacuum Settings (psig):	-0.40
Pressure Settings (psig)	0.00

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**

**500 BBL Diesel Tank - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

Mixture/Component	Month	Daily Liquid Surf. Temperature (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	63.43	53.60	73.25	58.06	0.0078	0.0055	0.0100	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**500 BBL Diesel Tank - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

Annual Emission Calculations	
Standing Losses (lb):	0.8097
Vapor Space Volume (cu ft):	254.5345
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0474
Vented Vapor Saturation Factor:	0.9891
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	254.5345
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	2.2506
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	18.0000
Roof Outage (ft):	0.2506
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.2506
Dome Radius (ft):	12.0000
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0079
Daily Avg. Liquid Surface Temp. (deg. R):	523.0962
Daily Average Ambient Temp. (deg. F):	54.9833
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	517.7333
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,250,5728
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0474
Daily Vapor Temperature Range (deg. R):	39.3149
Daily Vapor Pressure Range (psia):	0.0044
Breather Vent Press. Setting Range (psia):	0.4000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0079
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0055
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0100
Daily Avg. Liquid Surface Temp. (deg. R):	523.0962
Daily Min. Liquid Surface Temp. (deg. R):	513.2675
Daily Max. Liquid Surface Temp. (deg. R):	532.9249
Daily Ambient Temp. Range (deg. R):	21.5333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9891
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0079
Vapor Space Outage (ft):	2.2506
Working Losses (lb):	
Working Losses (lb):	0.4059
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0079
Annual Net Throughput (gal/yr.):	16,497.5776
Annual Turnover:	1.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	16,497.5776
Maximum Liquid Height (ft):	19.5000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	1.2155



**TANKS 4.0.9d  
Emissions Report - Detail Format  
Individual Tank Emission Totals**

**Emissions Report for: Annual**

**500 BBL Diesel Tank - Vertical Fixed Roof Tank  
Charleston, West Virginia**

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Distillate fuel oil no. 2	0.41	0.81	1.22



**ATTACHMENT O**

**MONITORING, RECORDKEEPING, REPORTING, TESTING  
PLANS**

## **ATTACHMENT O**

### **MONITORING/RECORDKEEPING/REPORTING/TESTING PLANS**

Integrity Industries, LLC requests the monitoring, recordkeeping, reporting, and testing requirements as stated in Attachment L.

**ATTACHMENT P**

**PUBLIC NOTICE**

# AIR QUALITY PERMIT NOTICE

## Notice of Application

Notice is given that Integrity Delaware, LLC (Integrity Industries, LLC) has applied to the West Virginia Department of Environmental Protection, Division of Air Quality (DAQ), for a modification to Regulation 13 Permit R13-3038 for Construction, Modification, and Operation of the Integrity-Friendly WV Site, a drilling mud mixing operation, located off of State Route 2 in Bens Run, Tyler County, West Virginia. The latitude and longitude coordinates (decimal degrees) are: 39.4739 N and 81.0981 W.

The applicant estimates that the potential to discharge of Regulated Air Pollutants will be: Particulate Matter (PM) of 15.24 tons per year (tpy) of which 15.14 tpy are fugitive, Particulate Matter less than 10 (PM10) of 4.54 tpy of which 4.47 are fugitive, and Particulate Matter less than 2.5 (PM2.5) of 0.49 tpy of which 0.45 tpy are fugitive, and volatile organic compounds of 0.15 tpy.

Modified operations will begin in February 2016. Written comments will be received by the West Virginia Department of Environmental Protection, DAQ, 601 57<sup>th</sup> Street, 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 [INSERT DATE] of November, 2015.

By: Integrity Delaware, LLC  
Max Duncan, President  
2000 W. Sam Houston Parkway S.  
Suite 400  
Houston, Texas 77042