



**MATERIAL SAFETY DATA SHEET**

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Effective Date: 11-07

I – PRODUCT AND COMPANY IDENTIFICATION		
CHEMICAL NAME N/A	CHEMICAL FORMULA Mixture	MOLECULAR WEIGHT N/A
TRADE NAME Limestone Rock- Crude Oil (Sweet) Mix (LRC)		
SYNONYMS None		DOT IDENTIFICATION UN 1267 (Based on Crude Oil)

II – COMPOSITION/INFORMATION ON INGREDIENTS				
COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO	Concentration (by wt )	MSHA/OSHA PEL	ACGIH TLV-TWA
Crude Petroleum	8002-05-9	0-100%	+Oil Mist(mineral) 5mg/m <sup>3</sup>	+Oil Mist(mineral) 5mg/m <sup>3</sup>
Sulfur Compounds	Mixture	0-2%	N/A	N/A
Saturates	Mixture	80-90%	N/A	N/A
Aromatics	Mixture	8-15%	N/A	N/A
Polars	Mixture	1-5%	N/A	N/A
Asphaltene	Mixture	0-2%	N/A	N/A
May Contain: Benzene	71-43-2	0 – 0.1%	1.0 ppm	0.5 ppm
Limestone	1317-65-3	0-100%	(T) 15 mg/m <sup>3</sup> , (R) <sup>#</sup> 5 mg/m <sup>3</sup>	(R) <sup>#</sup> 5 mg/m <sup>3</sup>
Silicon Dioxide *, SiO <sub>2</sub>	14808-60-7	0-10%	(R) 10 mg/m <sup>3</sup> / (% SiO <sub>2</sub> +2)*	(R) 0.025 mg/m <sup>3</sup>
Aluminum Oxide, Al <sub>2</sub> O <sub>3</sub>	1344-28-1	<1%	(T) 15 mg/m <sup>3</sup> , (R) <sup>#</sup> 5 mg/m <sup>3</sup>	<sup>#</sup> 10 mg/m <sup>3</sup>
Ferric Oxide, Fe <sub>2</sub> O <sub>3</sub>	1309-37-1	<1%	10 mg/m <sup>3</sup>	(R) 5 mg/m <sup>3</sup>
Magnesium Oxide, MgO	1309-48-4	0-8%	15 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
Calcium Oxide, CaO	1305-78-8	0-43%	5 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>
Sodium Oxide, Na <sub>2</sub> O	1313-59-3	<1%	-	-
Potassium Oxide, K <sub>2</sub> O	12136-45-7	<1%	-	-
Calcium Carbonate, CaCO <sub>3</sub>	471-34-1	40-100%	(T) 15 mg/m <sup>3</sup> , (R) 5 mg/m <sup>3</sup>	<sup>#</sup> 10 mg/m <sup>3</sup>

+: There are no exposure limits for crude oil published by ACGIH or OSHA. The limit for mineral oil mist is to be used only as a reference.

(R): Respirable; (T): Total; #: Particulate matter containing no asbestos and <1% crystalline silica; \*: Crystalline silica is normally measured as respirable dust. The OSHA standard also presents a formula for calculation of the PEL based on total dust: 30 mg/m<sup>3</sup> / (% SiO<sub>2</sub> +2)

### III – HAZARDS IDENTIFICATION

Angular gray particles ranging in size from powder to small stones mixed with amber to green to black liquid.

The crude oil component is volatile and flammable, and may cause flash fires. If ingested, aspiration may occur, causing lung damage or death.

Inhalation of excessive particulate matter may cause respiratory problems. Crystalline silica, a component of this product, has been designated as a Group I carcinogen by IARC.

Health Effects: The information below represents an overview of health effects caused by overexposure to one or more components in LRC. The individual effects are described in Section XI.

Primary route(s) of exposure:                     Inhalation                     Skin                     Ingestion

**EYE CONTACT:**                    Direct contact with dust may cause irritation by mechanical abrasion. Contact of the oil component with eyes may cause mild to severe irritation including stinging, watering, redness, and swelling. Conjunctivitis may occur.

**SKIN CONTACT:**                    Direct contact with the limestone dust material may cause irritation by mechanical abrasion. The oil component of the material is known to cause mild corrosive effects to skin and mucous membranes. Mild skin irritation including redness and a burning sensation may follow acute contact with the oil component. Prolonged contact may cause dermatitis, folliculitis, or oil acne.

**SKIN ABSORPTION:**                    The oil component may be absorbed through the skin in toxic amounts if large amounts of skin are exposed repeatedly. There have been rare occurrences of precancerous warts on the forearm, back of hands and scrotum from chronic prolonged contact.

**INGESTION:**                    Small amounts (a tablespoonful) of only limestone dust swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts of limestone dust component may cause gastrointestinal irritation, nausea, vomiting, diarrhea and blockage.

**INHALATION:**                    The limestone dust may irritate the nose, throat, and respiratory tract by mechanical abrasion or corrosive action. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits, and may cause respiratory and nasal irritation. Repeated excessive exposure may cause pneumoconiosis, such as silicosis and other respiratory effects. Inhalation of the crude oil component may cause central nervous system effects including headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death

Notes on Silicosis:

Use of LRC for construction purposes is not believed to cause additional acute toxic effects. Repeated overexposures to respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as 6 months has caused acute silicosis.

Chronic exposure to respirable quartz-containing dust in excess of appropriate exposure limits has caused silicosis, a progressive pneumoconiosis (lung disease). Restrictive and/or obstructive lung function changes may result from chronic exposure. Chronic tobacco smoking may further increase the risk of developing chronic lung problems.

Symptoms of acute silicosis include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain. Acute silicosis is a rapidly progressive, incurable lung disease and is typically fatal.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions. Smoking and obstructive/restrictive lung diseases may also exacerbate the effects of excessive exposure to this product. Medical conditions aggravated by exposure to the crude oil component include skin disorders, respiratory conditions, liver or kidney dysfunction, male reproductive and peripheral nerve disorders.

#### IV – FIRST AID MEASURES

##### EYES

Immediately flush eyes with plenty of clean water for at least 15 minutes, while holding the eyelids open. Occasionally lift the eyelids to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or develops later.

##### SKIN

Remove clothing if contamination with crude oil is observed. Wash affected area with soap and water. Contact a physician if irritation persists or develops later. Thermal burns, if it occurs, may require immediate medical attention, depending on severity and area burned.

##### INGESTION

**DO NOT INDUCE VOMITING.** Do not give liquids. Obtain immediate medical attention. If vomiting occurs, lean victim forward to reduce the risk of aspiration.

##### INHALATION

Remove individual to fresh air. Dust in throat and nasal passages should clear spontaneously. If victim is not breathing, provide artificial respiration, or provide additional oxygen if trained to do so. If the dust particles inhaled do not contain oil are inhaled, contact a physician if irritation persists or develops later. Seek medical attention immediately if you suspect that the oil component is inhaled.

#### V – FIRE FIGHTING MEASURES

##### FLASHPOINT

233 - 331° F (based on crude oil)

##### FLAMMABLE LIMITS IN AIR

N/D

##### EXTINGUISHING AGENT (based on crude oil)

Class B fire extinguishing media such as CO<sub>2</sub> or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters. Fire fighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

##### UNUSUAL FIRE AND EXPLOSION HAZARD

The oil component of this material is flammable and can be ignited by heat, sparks, flames, or other sources of ignition. Vapors may travel considerable distance to a source of ignition where they can ignite, flashback, or explode. May create vapor/air explosion hazard indoors, in confined spaces or outdoors. Vapors are heavier than air and can accumulate in low areas.

#### VI – ACCIDENTAL RELEASE MEASURES

##### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Persons involved in cleaning should first follow the precautions defined in Section VII of the MSDS.

Spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable quartz-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

In circumstances of emergency response involving a hazard or potential hazard of inhaling crude oil component, personnel must wear positive self-contained breathing apparatus while engaged in the emergency response operations until it is determined through the use of air monitoring that a decreased level of respiratory protection will not result in hazardous exposures to employees (29 CFR 1910.120(q)(3)(iv)).

Eliminate all sources of ignition in the vicinity of the spill or released vapor. Place contaminated material in disposable containers, and dispose of in a manner consistent with local regulations.

If the product has a substantial quantity of crude oil in the mixture, follow prescribed procedures for reporting and responding to

large spills and advise the National Response Center if the substance has entered a waterway (1-800-424-8802).

## VII – HANDLING AND STORAGE

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

Follow protective controls set forth in Section VIII of this MSDS when handling this product.

Respirable quartz-containing dust may be generated during processing, handling and storage. Do not breathe dust. Avoid contact with skin and eyes. Do not store near food or beverages or smoking materials. Do not stand on piles of materials; it may be unstable.

This material contains an oil component that can evaporate and form a vapor, which can catch fire and/or explode. Many sources can ignite the vapor, such as: pilot lights, welding equipment, and electrical equipment. Do not cut, drill, grind or weld on empty containers since they may contain explosive residues.

## VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

### ENGINEERING CONTROLS

Ventilation: Use local exhaust or general ventilation to maintain exposures below appropriate exposure and flammability limits. If a person breathes large amounts of dust from this material, move the exposed person to fresh air at once; other measures are usually unnecessary.

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

### EYE/FACE PROTECTION

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated. If product contacts the eyes, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn when working with this material.

### SKIN PROTECTION

Supported polyvinyl chloride gloves should be worn to prevent skin contact. Protective clothing such as gloves, apron, boots, and facial protection should be worn when engineering controls or work practices are not adequate for prevention of skin contact.

### RESPIRATORY PROTECTION

For respirable quartz levels that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved 100 series particulate filter respirator must be worn. If respirable quartz levels exceed or are likely to exceed an 8 hour-TWA of 0.5 mg/m<sup>3</sup> or if it has been determined that there is no hydrogen sulfide exposure hazard (exposure potential below H<sub>2</sub>S permissible exposure limit) and airborne concentrations are or may be expected to exceed limits for odor or irritation, a NIOSH-approved air purifying, combination full-face respirator with a 100 series particulate filter and organic vapor cartridges or canisters must be worn. Please note that protection provided by air purifying respirators is limited.

Emergency or planned entry into unknown concentrations or IDLH conditions: Any self-contained breathing apparatus that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

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

Respirator use must comply with applicable OSHA/MSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, medical clearance and other requirements. For additional information contact NIOSH at 1-800-356-4674.

**GENERAL HYGIENE CONSIDERATIONS**

Following the guidelines in this MSDS are recognized as good industrial hygiene practices. Avoid skin and eye contact. Avoid breathing dust. Wash exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use. Use care when laundering clothing to prevent formation of vapors, if the oil component is present, which could ignite the washer or dryer.

**IX – PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE AND ODOR</b> Angular gray particles ranging in size from powder to small stones mixed with amber to green to black liquid. Possible slight petroleum odor.	<b>SPECIFIC GRAVITY</b> 0.9 – 2.75 (Based on crude oil and limestone)
<b>BOILING POINT</b> 379-1315° F (based on crude oil)	<b>VAPOR DENSITY IN AIR (AIR = 1)</b> Not Applicable
<b>VAPOR PRESSURE</b> < 0.5 psi (based on crude oil)	<b>% VOLATILE, BY VOLUME</b> Variable (based on crude oil)
<b>EVAPORATION RATE</b> Variable (based on crude oil)	<b>SOLUBILITY IN WATER</b> Insoluble to slightly soluble (Based on crude oil and limestone)

**X – STABILITY AND REACTIVITY**

<b>STABILITY</b> Stable	<b>CONDITIONS TO AVOID</b> Avoid high temperatures, open flames, sparks, welding, smoking and other sources of ignition. Contact with incompatible materials (see below).
<b>INCOMPATIBILITY (Materials to avoid)</b> Strong oxidizing agents such as chlorates and chlorides, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride. Silica dissolves in hydrofluoric acid producing a corrosive gas; silicon tetra fluoride.	
<b>HAZARDOUS DECOMPOSITION PRODUCTS</b> Combustion can yield carbon dioxide, carbon monoxide, possibly hydrogen sulfide, other organic compounds and sulfur oxides. Silica dissolves in hydrofluoric acid producing a corrosive gas- silicon tetra fluoride.	

**XI – TOXICOLOGICAL INFORMATION**

This product is a mixture of components. The composition percentages are listed in Section II. Toxicological information is listed below:

**Crude Oil:**

Exposure Routes: Inhalation, ingestion, skin absorption, skin/eye contact

Target Organs: Eyes, skin, respiratory system, gastrointestinal system

Acute Effect: May cause eye, skin, respiratory and nasal irritation. Ingestion may cause vomiting, resulting in aspiration and chemical pneumonia. Central nervous system effects from inhalation may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

Chronic Effect/Carcinogenicity: There have been rare occurrences of precancerous warts on the forearm, back of hands and scrotum from chronic prolonged skin contact. These warts were not necessarily on the exposed parts of the body. Crude Oil is not listed as a carcinogen by the NTP, IARC, or OSHA. However, repeated skin contact by laboratory mice produced skin tumors.

The tumors reduced in occurrence when the animals' skin was washed between applications.

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

Respirable crystalline silica (quartz):

ACGIH TLV= 0.025 mg/m<sup>3</sup>

MSHA and OSHA PEL:

Crystalline quartz (respirable): PEL-TWA 10 mg/m<sup>3</sup>/ (%SiO<sub>2</sub> + 2).

Crystobalite: Use ½ the value calculated from the count or mass formulae for quartz.

Tridymite: Use ½ the value calculated from the formulae for quartz.

Other Particulates:

TLV = 10 mg/m<sup>3</sup> (inhalable/total particulate, not otherwise classified)

TLV = 3 mg/m<sup>3</sup> (respirable particulate, not otherwise classified)

OSHA PEL = 15 mg/m<sup>3</sup> (total particulate, not otherwise regulated)

OSHA PEL = 5 mg/m<sup>3</sup> (respirable particulate, not otherwise regulated)

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

#### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions.

Exposure to dust may aggravate existing skin and/or eye conditions.

**Chronic Effects/Carcinogenicity:** Occupational exposure to free silica is known to produce silicosis, a chronic, disabling lung disease characterized by the formation of silica-containing nodules of scar tissue in the lungs. Simple silicosis, in which the nodules are less than 1 cm in diameter is generally asymptomatic but can be slowly progressive, even in the absence of continued exposure.

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

**Symptoms of Silicosis:** Not all individuals with silicosis will exhibit symptoms of the disease. However, silicosis is progressive, and symptoms can appear at any time, even years after exposures have ceased. Symptoms of silicosis may include (but are not limited to): shortness of breath, difficulty breathing with or without exertion, coughing, diminished work capacity, diminished chest expansion, reduction of lung volume, right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

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

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a casual relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicosis do not account for lung cancer confounders, especially smoking.

The IARC designates crystalline silica as carcinogenic (Group 1). The NTP indicates that crystalline silica is reasonably anticipated to be a carcinogen (Group 2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

Aluminum Oxide:

Exposure route: Eyes, skin, inhalation.

Target organs: Eyes, skin, respiratory system.

Acute effect: Animal studies with  $\alpha$ -alumina (crystalline form) were reported in 1941. This study found that alumina particles well below 40  $\mu\text{m}$  in diameter produced a "nuisance particulate" reaction in animals. Very fine  $\text{Al}_2\text{O}_3$  powder was not fibrogenic in rats, guinea pigs, or hamsters when inhaled for 6 to 12 months and sacrificed at periods up to 12 months following the last exposure.

Chronic effect/carcinogenicity: Aluminum oxide is not classifiable as a human carcinogen. Epidemiologic surveys have indicated an excess of nonmalignant respiratory disease in workers exposed to aluminum oxide during abrasives production.

Ferric Oxide:

Exposure route: Inhalation.

Target organs: Respiratory system.

Acute effect: Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis. Experimental work in animals exposed by intratracheal injection or by inhalation to iron oxide mixed with less than 5% silica has shown no evidence of fibrosis produced in lung tissue.

Chronic effect/carcinogenicity: Not classifiable as to human carcinogen potential.

Magnesium Oxide:

Exposure route: Inhalation, eye/skin contact.

Target organs: Eyes, respiratory system.

Acute effect: Magnesium oxide dust caused slight irritation of the eyes and nose, conjunctivitis, inflammation of the mucous membrane, and coughing up discolored sputum after industrial exposures amongst workers exposed to an unspecified concentration of  $\text{MgO}$ . Acute toxicity causes nausea, malaise, general depression and paralysis of respiratory, cardiovascular and central nervous system.

Experiments with cats exposed to freshly formed  $\text{MgO}$  (magnesium ranging from 21 to 156 mg) fumes plus 10% carbon dioxide showed uniform but slight hypothermia. These animals rapidly returned to normal and showed no subsequent ill effect upon cessation of  $\text{MgO}$  inhalation.

Chronic effect/carcinogenicity: NIOSH indicated that there may be a carcinogenic risk from exposure to  $\text{MgO}$  dust.

Calcium Oxide:

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

Target organs: Eyes, skin, respiratory system.

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

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

Sodium Oxide:

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

Target organs: Eyes, skin, respiratory system.

Acute effect: causes burns, irritation of skin, eyes, and respiratory tract, and it is extremely destructive of mucous membranes.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

**Potassium Oxide:**

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

Target organs: Eyes, skin, respiratory system.

Acute effect: If inhaled, causes sore throat, cough, burning sensation and shortness of breath. Contact with skin produces pain and blisters. Severe deep burns, redness and pain occur with eye contact. Ingestion of  $K_2O$  results in burning sensations, abdominal pain, shock or collapse.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen

**Calcium Carbonate:**

Exposure route: Inhalation, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: Irritation of the eyes, skin and respiratory system and cough.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen

**Benzene:** *This product may contain 0 – 0.1% benzene.*

ACHIH TLV TWA: 0.5 ppm / STEL: 2.5 ppm

MSHA and OSHA PEL TWA: 10 ppm / STEL: 25 ppm / Peak: 50 ppm, 10 minutes

Exposure Routes: Inhalation, skin absorption, ingestion

Target Organs: Hematopoietic (blood forming) system, lymphatic system, nervous system, reproductive system

Acute Effects: Inhalation (5-10 minutes) of very high levels of benzene (10,000-20,000 ppm) can result in death. Lower levels (700-3,000 ppm) can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Ingestion can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, coma, and death. Skin contact may cause redness and sores. Eye contact may cause irritation and cornea damage.

Chronic Effects/Carcinogenicity: Benzene is on the NTP, OSHA and IARC carcinogen lists. The IARC and the EPA have determined that benzene is carcinogenic to humans (Group 1 Carcinogen). Chronic inhalation of certain levels of benzene causes disorders in the blood in humans, including leukemia (cancer of blood forming organs). Benzene specifically affects bone marrow (the tissues that produce blood cells). Aplastic anemia, excessive bleeding, and damage to the immune system (by changes in blood levels of antibodies and loss of white blood cells) may develop. Several occupational studies suggest that benzene may impair fertility in women exposed to high levels. However, these studies are limited due to lack of exposure history, simultaneous exposure to other substances, and lack of follow-up.

## XII – ECOLOGICAL INFORMATION

Coating action of the oil component may be toxic to aquatic organisms. Keep out of all bodies of water and sewage drainage systems. On release to the environment, the lighter components of crude oil may evaporate. The remaining portion may become dispersed in the water column or absorbed to soil or sediment. Crude oil is not readily biodegradable.

## XIII – DISPOSAL CONSIDERATIONS

### WASTE DISPOSAL METHOD

Collect and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations. The oil component of this material is not listed as a RCRA hazardous waste under Federal Regulations (40 CFR 261-271). This material may meet the criteria of an "ignitable" hazardous waste. This material could also become hazardous if mixed or contaminated with a listed hazardous waste.

## XIV – TRANSPORT INFORMATION

## DOT HAZARD CLASSIFICATION

3 (based on crude oil)

## PLACARD REQUIRED (based on crude oil)



## LABEL REQUIRED

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

## XV – REGULATORY INFORMATION

Crystalline silica, a component of this product, is on the NTP and IARC carcinogen lists, but not on the OSHA carcinogen list. In October 1996, an IARC Working group re-assessing crystalline silica, a component of this product, designated crystalline silica as a human carcinogen (Group 1 carcinogen).

Crystalline silica in October 1996 was listed on the Safe Drinking Water and Toxic Enforcement ACT of 1986 (California Proposition 65) as chemical known to the state to cause cancer or reproductive toxicity.

Benzene, a possible component of this product, is on the NTP, OSHA and IARC carcinogen lists. The IARC and the EPA have determined that benzene is carcinogenic to humans (Group 1 Carcinogen). Benzene is number six on the CERCLA Priority List of Hazardous Substances.

## CLEAN WATER ACT (OIL SPILLS)

Any spill or release of this product containing large amounts of crude oil to “navigable waters” or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) as required by U.S. Federal Law. Also contact appropriate state and local authorities.

## SARA 311 CATEGORIES

The Following EPA Hazard Categories apply to this product containing crude oil:

Immediate (Acute) Health Effects

Delayed (Chronic) Health Effects

Fire hazard

## XVI – OTHER INFORMATION

ACGIH: American Conference of Governmental Industrial Hygienists

CFR: US Code of Federal Regulations

DOT: US Department of Transportation

IARC: International Agency for Research on Cancer

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

NTP: National Toxicology Program

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

PEL: Permissible Exposure Limit

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

TLV: Threshold Limit Value

TWA: Time-weighted Average

FOR FURTHER INFORMATION CONTACT:

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HOURS: 8 AM – 5 PM (EST)

DATE OF PREPARATION: 11/07

NOTICE: Martin Marietta Materials believes that the information contained on this Material Safety Data Sheet is accurate. The suggested precautions and recommendations are based on recognized good work practices and experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance as not all use circumstances can be anticipated. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulation, rules or insurance requirement. However, product must not be used in a manner which could result in harm.

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

MSDS 3600-002