Vulcan Materials Company

MATERIAL SAFETY DATA SHEET

Effective Date: 05/01/2012
Replaces: 05/31/2009

Lime Treated Base

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:
Lime Treated Base

Formula:
Mixture

Synonyms/Common Names:
LTB

Manufacturer/Contact Info:
Vulcan Materials Company and its subsidiaries and affiliates
1200 Urban Center Drive
Birmingham, AL 35242

General Phone Number:
1.866.401.5424

Emergency Phone Number:
1.866.401.5424 (3E Company, 24 hours/day, 7 days/week)

SECTION 2. COMPOSITION INFORMATION ON INGREDIENTS

Hazardous Components	CAS No.	% by Weight
Limestone* *Composition varies naturally-typically contains quartz (crystalline silica)	1317-65-3 14808-60-7	85-90 >1
Lime (Lime is produced from natural minerals. Consequently, small variable amounts of impurities exist, primarily mixtures of carbonates, hydroxides of calcium and magnesium, and oxides of aluminum and iron.)	12001-27-3	5-10
Water	7732-18-5	8-12

SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING
Wet product can cause chemical burns to eyes and skin. Avoid direct contact and use protective clothing. Avoid breathing excessive dust from hardened/dried material. Dust may irritate the eyes, skin and respiratory tract. Breathing silica-containing dust for prolonged periods in the workplace can cause lung damage and a lung disease called silicosis. Several scientific organizations have classified crystalline silica as causing lung cancer. Silicosis or lung cancer can result in permanent injury or death.

POTENTIAL HEALTH EFFECTS

Note: This product is normally mixed, transported and used only when wet. This reduces the potential for dust exposure. After product has dried and hardened, further handling or processing may generate dust. When wet, this product is caustic (pH approximately equal 12).

Primary Routes of Exposure:
Eyes, skin, inhalation

Eye Contact:
Contact may result in chemical (caustic) burns and eye injury which may be progressive and could cause blindness. Symptoms may include tearing, redness, pain, swelling with blurred vision. Dusts from hardened product may be irritating.

Skin Contact:
May cause skin irritation with redness, an itching or burning feeling, and swelling of the skin. May cause contact dermatitis, with symptoms that may include (but are not limited to) reddening, irritation and rash. More severe effects, including chemical (alkali) burns and skin ulcers may occur. Dusts from hardened product may be irritating. For additional information, see Section 11.

Skin Absorption:
Not expected to be a significant exposure route following short-term exposure.

Inhalation:
Not expected to be a significant exposure route. Dusts from hardened product may irritate the mouth, nose, throat and lungs. Coughing, sneezing and shortness of breath may occur. For additional information, see Section 11.

Ingestion:
Direct contact with exposed tissues may result in severe irritation with pain, nausea, vomiting, and/or diarrhea and possibly chemical (alkali) burns.

POTENTIAL HEALTH EFFECTS

Effects Following Prolonged or Repeated Exposure:
Wet product may cause drying, thickening and cracking of the skin and nails. If product is subjected to mechanical forces (such as demolition work) which generate dust particles, exposure to respirable crystalline silica-containing dust is possible. Exposure to high levels of respirable crystalline silica is associated with silicosis, lung cancer, and autoimmune disorders. For additional information, see Section 11. Chronic exposure to lime dust may cause perforation of the nasal septum.

Carcinogenicity:
Crystalline silica has been listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), and/or the Occupational Safety and Health Administration (OSHA). For additional information, see Section 11.

Signs and Symptoms of Exposure:
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.

Medical Conditions Aggravated by Exposure:
Irritated or broken skin increases chance of contact dermatitis. Pre-existing medical conditions that may be aggravated by exposure include disorders of the eye, skin and lung (including asthma and other breathing disorders). If addicted to tobacco, smoking will impair the ability of the lungs to clear themselves of dust.

SECTION 4. FIRST AID MEASURES

Eyes:
Immediately flush eye(s) with plenty of clean water for at least 15 minutes while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Get immediate medical attention.

Skin:
Wash affected areas thoroughly with mild soap and fresh water. Remove and wash contaminated clothing. Contact a physician if irritation persists or later develops. Burns should be treated as caustic burns.

Inhalation:
For dried product dust inhalation, remove person to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

Ingestion:
If person is conscious, do not induce vomiting. Give large quantity of water and get medical attention. Never attempt to make an unconscious person drink.

Notes to Physician:
Calcium oxide particles readily adhere to the conjunctiva and may form clumps of moist compound which can be difficult to remove by usual irrigation. These clumps tend to lodge deep in inferior and superior cul-de-sacs and act as reservoirs of calcium hydroxide over long periods of time. Rapid irrigation is indicated; however, debridement and use of a complexing agent (such as disodium EDTA) may also be necessary.

Not all individuals with silicosis will exhibit symptoms of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposures have ceased. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

For emergencies, contact 3E Company at 1.866.401.5424 (24 hours/day, 7 days/week).

SECTION 5. FIREFIGHTING MEASURES

Flash Point (Method Used):	**Flammable Limits:**	
Not applicable	**LEL:** Not applicable	**UEL:** Not applicable

Autoignition Temperature:
Not applicable

Extinguishing Media:
The presence of this material in a fire does not hinder the use of any standard extinguishing medium. Use extinguishing medium for surrounding fire.

Special Firefighting Procedures:
None

Unusual Fire and Explosion Hazards:
Hydrated lime decomposes to calcium oxide (quicklime) and steam at 580°C (1079°F). If this temperature or greater prevails, a self-contained breathing apparatus approved by NIOSH/MSHA is recommended.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Precautions if Material is Spilled or Released:
Persons involved in cleanup processes should first observe precautions (as appropriate) identified in Section 8 of this MSDS. Wet product should be removed from roads or other surfaces where it may interfere with traffic. Prevent from entering into sewers or drainage systems where it can harden and clog flow. In emergencies, after cleanup of bulk material, small amounts of residue can be flushed to the drain, using plenty of water. If hardened material is spilled and dust if generated, cleanup personnel may be exposed to respirable crystalline silica. Do not dry sweep or use compressed air for clean-up. Wetting of spilled material and/or use of respiratory protective equipment may be necessary.

For emergencies, contact 3E Company at 1.866.401.5424 (24 hours/day, 7 days/week).

Waste Disposal Methods:
Material can be retained until it hardens, and then it may be disposed of as common waste. However, waste disposal must be in compliance with all applicable federal, state, and local laws and regulations.

Environmental Precautions:
Not applicable

SECTION 7. HANDLING AND STORAGE

Storage:

Do not store near food and beverages or smoking materials.

Handling:

Use personal protection and controls identified in Section 8 of this MSDS as appropriate. Respirable crystalline silica-containing dust may be generated when hardened product is subjected to mechanical forces, such as in demolition work and surface treatment (sanding, grooving, chiseling, etc.).

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Legend:

NE = Not Established; PEL = Permissible Exposure Limit; TLV = Threshold Limit Value; REL = Recommended Exposure Limit; OSHA = Occupational Safety and Health Administration; MSHA = Mine Safety and Health Administration; NIOSH = National Institute for Occupational Safety and Health; ACGIH = American Conference of Governmental Industrial Hygienists

Component	OSHA/MSHA PEL	ACGIH TLV	NIOSH REL
Limestone (Calcium Carbonate)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)	10 mg/m³ (total dust as calcium carbonate)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)
Particulates not otherwise classified	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)	10 mg/m³ (inhalable fraction) 3 mg/m³ (respirable fraction)	NE
Respirable dust containing silica	10 mg/m³ , (% silica + 2)	Use Respirable Silica TLV	Use Respirable Silica REL
Total dust containing silica	OSHA: 30 mg/m³ ÷ (% silica + 2) MSHA: 30 mg/m³ ÷ (% silica + 3)	NE	NE
Respirable Crystalline Silica (quartz)	NE - Use respirable dust PEL	0.025 mg/m³	0.05 mg/m³
Respirable Tridymite and Cristobalite (other forms of crystalline silica)	½ of OSHA and MSHA respirable dust PEL	0.025 mg/m³	0.05 mg/m³
Calcium Hydroxide	MSHA-PEL = 5 mg/m³ OSHA Proposed-PEL = 5 mg/m³	5 mg/m³	5 mg/m³ (respirable fraction)
Calcium Oxide	PEL = 5 mg/m³	2 mg/m³	2 mg/m³
Magnesium Oxide	MSHA-PEL = 10 mg/m³ OSHA Proposed-PEL = 10 mg/m³	10 mg/m³	NE

Eye Protection:

Safety glasses with side shields should be worn as minimum protection. Goggles or face shield should be worn where splashing is possible. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated due to working with hardened product.

Skin Protection (Protective Gloves/Clothing):

Waterproof gloves, rubber boots, and clothing sufficient to protect skin from contact with wet product should be worn. Clothing saturated from contact with wet product should be removed promptly to prevent continued contact with skin. As a precaution, wash hands thoroughly before eating, smoking, and using toilet facilities. After working with product, workers should clean their skin/shower with soap and water. Clean clothing should be worn after showering.

Respiratory Protection:

Ordinarily not required when working with wet product. All respirators must be NIOSH-approved for the exposure levels present. (See NIOSH Respirator Selection Guide). The need for respiratory protection should be evaluated by a qualified safety and health professional. Activities that generate dust require the use of an appropriate dust respirator where dust levels exceed or are likely to exceed allowable exposure limits. For respirable silica levels that exceed or are likely to exceed an 8 hr Time Weighted Average (TWA) of 0.5 mg/m³, a high efficiency particulate filter respirator must be worn at a minimum; however, if respirable silica levels exceed or are likely to exceed an 8 hr TWA of 5.0 mg/m³ a positive pressure, full face respirator or equivalent is required. Respirator use must comply with applicable MSHA (42 CFR 84) or OSHA (29 CFR 1910.134) standards, which include provisions for a user training program, respirator inspection, repair and cleaning, respirator fit testing, medical surveillance and other requirements.

Engineering Controls:

Ordinarily not required when working with wet product. Activities that generate dust from hardened product require the use of local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

Other:

A clean water supply for emergency first aid and washing facilities should be readily available. Clothing should be washed between uses. Dust and other components should be monitored regularly to determine worker exposure levels. Exposure levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: Not available	**pH:** Approximately 12	**Specific Gravity (H_2O = 1):** 2.37 - 2.40
Evaporation Rate (Butyl Acetate = 1): Not available	**Melting Point:** Not available	**Vapor Pressure (mm Hg.):** Not available
Solubility in Water: Slight	**Vapor Density (Air = 1):** Not available	**% Volatile:** Not available

Appearance and Odor:

Off-white gray tan flowable, granular mixture. Faint lime odor.

SECTION 10. STABILITY AND REACTIVITY

Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Contact with incompatible materials should be avoided (see below). See Sections 5 and 7 for additional information.

Incompatibility (Materials to Avoid):

Product is caustic (pH approximately 12). Avoid contact with strong acids, nitroparaffins, maleic anhydride, or phosphorus. Limestone ignites on contact with fluorine and is incompatible with acids, aluminum, ammonium slats and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica disolves readily in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.

Hazardous Decomposition or Byproducts:

Silica-containing respirable dust particles may be generated. When heated, quartz is slowly transformed into tridymite (above 860°C/1580°F) and cristobalite (above 1470°C/2678°F). Both tridymite and cristobalite are other forms of crystalline silica and are considered more fibrogenic to the lungs than quartz.

Hazardous Polymerization:

Not known to occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Effects:

No specific data on product. Material similar to limestone (calciuim carbonate CAS# 471-34-1) has oral LD50 (rats) = 6450 mg/kg. Calcium oxide (lime) dust severely irritates the tissues contacted primarily because of its alkalinity.

Effects Following Prolonged or Repeated Exposure:

The following information pertains to hardened dry material:

Prolonged overexposure to respirable dusts in excess of allowable exposure limits can cause inflammation of the lungs leading to possible fibrotic changes, a medical condition known as pneumoconiosis.

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of allowable exposure limits may cause a chronic form of silicosis, an incurable lung disease that may result in permanent lung damage or death. Chronic silicosis generally occurs after 10 years or more of overexposure; a more accelerated type of silicosis may occur between 5 and 10 years of higher levels of exposure. In early stages of silicosis, not all individuals will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: 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.

Repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months may cause acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

Respirable dust containing newly broken silica 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 particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with autoimmune disorders and other adverse health effects involving the kidney. In particular, the incidence of scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) appears to be higher in silicotic individuals. To date, the evidence does not conclusively determine a causal relationship between silica exposure and these adverse health effects.

Carcinogenicity:

Epidemiology studies on the association between crystalline silica exposure and lung cancer have had both positive and negative results. There is some speculation that the source and type of crystalline silica may play a role. Studies of persons with silicosis indicate an increased risk of developing lung cancer, a risk that increases with the level and duration of exposure. It is not clear whether lung cancer develops in non-silicotic patients. Several studies of silicotics do not account for lung cancer confounders, especially smoking, which have been shown to increase the risk of developing lung disorders, including emphysema and lung cancer.

In October 1996, an IARC Working Group designated respirable crystalline silica as carcinogenic (Group 1). The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-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.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Ecotoxicological Data:

No specific data on this product.

Environmental Fate Data:

No specific data on this product.

Other:

No specific data on this product.

SECTION 13. DISPOSAL CONSIDERATIONS

Place contaminated materials in appropriate containers and dispose of in a manner consistent with applicable federal, state, and local regulations. Prevent from entering drainage, sewer systems, and unintended bodies of water. It is the responsibility of the user to determine, at the time of disposal, whether product meets criteria for hazardous waste. Product uses, transformations, mixture and processes, may render the resulting material hazardous.

SECTION 14. TRANSPORT INFORMATION [Note: Not intended to be all-inclusive.]

DOT Proper Shipping Name:	**DOT Hazard Classification:**
Not regulated.	Not applicable.
UN/NA Number:	**DOT Packing Group:**
Not applicable.	Not applicable.

Labeling Requirements:

Not applicable. Label as required by the OSHA Hazard Communication standard [29 CFR 1910.1200(f)] and applicable state and local regulations.

SECTION 15. REGULATORY INFORMATION [Note: Not intended to be all-inclusive.]

Toxic Substances Control Act (TSCA):

The components in this product are listed on the TSCA Inventory or are exempt.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):

Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act.

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

Section 302 extremely hazardous substances:

None

Section 311/312 hazard categories:

Delayed Health

Section 313 reportable ingredients at or above de minimus concentrations:

None

California Proposition 65:

This product contains substances (crystalline silica) known to the State of California to cause cancer.

State Regulatory Lists:

Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list or all state regulations. Therefore, the user should review the components listed in Section 2 and consult state or local authorities for specific regulations that apply.

SECTION 16. OTHER INFORMATION

Disclaimer

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

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Vulcan Materials Company and its subsidiaries and affiliates
1200 Urban Center Drive
Birmingham, AL 35242

MSDS 3239-035

Vulcan
Materials Company

Dear Customer/Contractor:

Please find attached a material safety data sheet (MSDS) for the product that you purchased from Vulcan Materials Company or one of its subsidiaries or affiliates ("Vulcan"). This is a revised MSDS and replaces any previous versions of the MSDS for this product. This MSDS is provided to you as required by the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (29 CFR 1910.1200), the Mine Safety and Health Administration's (MSHA) Hazard Communication Standard (30 CFR Part 47), and/or any applicable state Right-to-Know laws.

It is the responsibility of your company to communicate this information to your employees, customers, and contractors who may use or come in contact with this product. Further, if you distribute this product, Vulcan requests, and applicable laws may require, that you forward this MSDS to your customers.

Please direct this information to the person responsible for safety and health compliance at your company. If you have questions about the MSDS, please contact Vulcan at 1200 Urban Center Drive, Birmingham, AL 35242 or 1-866-401-5424.

If you need additional copies of this or any other Vulcan MSDS or a Spanish language version, you can obtain them at www.vulcanmaterials.com or by calling 1-866-401-5424.

La MSDS puede obtenerse en www.vulcanmaterials.com o llamando al 1-866-401-5424.

Sincerely,

Chad E. McDougal, CIH, CSP

Manager, Occupational Health