Paving Grades Group 1 Bitumar USA US USA017

Safety Data Sheet

According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)
Issue date: 2/3/2025 Revision date: 8/25/2025 Version: 1.1

SECTION 1 Identification

1.1. Product identifier

Product name : Paving Grades Group 1 Bitumar USA US USA017

1.2. Other means of identification

Synonyms : Baltimore: 180-220 PEN, 4640, 5234, 5234E, 52S34, 5228, 52S28, 5828, 5828NO, 58S28, 6428, 64S28, 64V28, 64E28, 6422, 64S22, 7022, 64H22, 7622, 64E22, 64E22NO, 8222, 76E28, 76E28HP / 64E22AS.30(6240), 64E22AS.40(6240), 64E22AS.50(6240), 64E22AS.60(6240), 64S22AS.30(6240), 64S22AS.50(6240) These grades contain AD-here® 62-40 (ZA70000) US / Canton: 6422, 64S22. / 64S22AS.30(6240) This grade contains AD-here® 62-40 (ZA70000) US / Douglasville: 6422, 6722, 7622, 180-220 PEN / South Portland: 5828, 58S28, 6428, 64S28 / Rensselaer: 5234, 58S28, 58E28, 64E28, 64S22, 64H22, 64V22, 64E22, 7022, 7622, 7628, 8222, HRAP / North Kingstown: 5828, 58S28, 6428, 64S28, 6422, 64S22

1.3. Recommended use of the chemical and restrictions on use

Recommended use : Asphalt
Restrictions on use : None known

1.4. Supplier's details

Manufacturer
Bitumar USA Inc.
6000 Pennington Ave
Baltimore MD, 21226
T 410-354-9550

1.5. Emergency phone number

Emergency number : Canada: 613-993-6666 or CANUTEC (transport only) *666; US: 1-800-424-9300 (ChemTrec)

SECTION 2 Hazard Identification

2.1. Classification of the substance or mixture

GHS US classification

Carcinogenicity, Category 2 — Suspected of causing cancer.

2.2. Label elements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Warning
Hazard statements (GHS US) : Suspected of causing cancer.
Precautionary statements (GHS US) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves, protective clothing, eye protection, face protection, and hearing protection.
If exposed or concerned: Get medical advice or attention.
Store locked up.

Dispose of contents and/or container to a hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Supplementary information : None.

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

No additional information available

2.5. Unknown acute toxicity

Not applicable

SECTION 3 Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Common Name (Synonyms)	Product identifier	%
Asphalt	Bitumen / Bituminous asphalt / Bitumens, asphalt / Asphalt (A very complex combination of high molecular weight organic compounds containing a relatively high proportion of hydrocarbons having carbon numbers predominantly greater than C25 with high carbon-to-hydrogen ratios. It also contains small amounts of various metals such as nickel, iron, or vanadium. It is obtained as the non-volatile residue from distillation of crude oil or by separation as the raffinate from a residual oil in a deasphalting or decarbonization process.) / Bitumens / Asphalt (petroleum)	CAS-No.: 8052-42-4	80 - 100

Comments : All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
This product may contain small amounts of Hydrogen sulphide which may accumulate in confined spaces.
US GHS: The exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

SECTION 4 First aid measures

4.1. Description of necessary first-aid measures

First-aid measures general : IF exposed or concerned: Get medical advice or attention. If you feel unwell, seek medical advice (show the label where possible). Medical personnel should be made aware of substance(s) involved and take measures for self protection. Show this safety data sheet to the doctor in attendance. Avoid contact with skin and eyes. Keep out of the reach of children.

First-aid measures after inhalation : If symptoms develop move victim to fresh air. If symptoms persist, obtain medical attention. For breathing difficulties, oxygen may be necessary.

First-aid measures after skin contact : In case of contact with molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily. Cover wound with sterile dressing.

First-aid measures after eye contact : If hot product contacts eye, flush with water for at least 15 minutes and seek medical attention immediately. Remove contact lenses, if applicable, and continue flushing. Get medical attention immediately.

First-aid measures after ingestion : Rinse mouth. Do not induce vomiting. Call a poison center or a doctor if you feel unwell.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects after inhalation : Inhalation of vapour can cause respiratory tract irritation or chemical burns. Vapours have a narcotic effect and may cause headache, fatigue, dizziness and nausea. In high concentrations, hydrogen sulphide may produce pulmonary edema and respiratory depression or paralysis. Dusts may irritate the respiratory tract, skin and eyes. Direct contact can produce thermal burns.

Symptoms/effects after skin contact : Prolonged or repeated contact may dry skin and cause irritation. Dust or powder may irritate the skin. Contact with molten material may cause thermal burns.

Symptoms/effects after eye contact : Direct contact with eyes may cause temporary irritation. Dust or powder may irritate the eyes. Contact with molten material may cause thermal burns.

Symptoms/effects after ingestion : Not a normal route of exposure. May cause stomach distress, nausea or vomiting. Contact with molten material may cause thermal burns.

Chronic symptoms : Prolonged inhalation may be harmful. Chronic exposure causes liver and kidney damages. Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure.

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

Other medical advice or treatment : Symptoms may be delayed. Treat symptomatically. No attempt should be made to remove firmly adhering bitumen from the skin. If solvent treatment is used, it should be followed by washing with soap and water, then the application of a proprietary refatting agent or skin cleansing cream. Only medically approved solvents may be used to remove bitumen from burns, as other solvents could cause further skin damage.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Carbon dioxide. Dry chemical. Water spray. Foam.

Unsuitable extinguishing media : Do not use a water jet since it may cause the fire to spread.

5.2. Specific hazards arising from the chemical

Fire hazard : Vapors will ignite and burn at temperatures exceeding the flash point. If product is heated above its flash point it will release flammable vapors which can burn in the open or be explosive in confined spaces if exposed to ignition source. During fire, gases hazardous to health may be formed. In case of fire or explosion do not breathe fumes.

Explosion hazard : vapors may form explosive mixture with air. Vapors are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapors.

Hazardous decomposition products in case of fire : May include and are not limited to: oxides of carbon. Sulfur oxides (SOx). Nitrogen oxides. Polycyclic-aromatic hydrocarbons (PAH). Hydrogen sulfide.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : In case of fire: Stop leak if safe to do so. Do not enter fire area without proper protective equipment, including respiratory protection. Move containers from fire area if it can be done without personal risk.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6 Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. In the event of a significant spillage : Notify authorities if product enters sewers or public waters. Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

For non-emergency personnel

Emergency procedures : Ventilate spillage area.

For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

Environmental precautions : Avoid release to the environment. Do not discharge the product into the environment.

6.2. Methods and materials for containment and cleaning up

For containment : Stop leaks if it can be done without personal risk. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up : Leave the molten product to cool down. Remove solidified product mechanically. Soak up with inert absorbent material (for example sand, sawdust, a universal binder, silica gel). Take up mechanically (sweeping, shoveling) and collect in suitable container for disposal. Notify authorities if product enters sewers or public waters. Clean contaminated surfaces with an excess of water. Minimize generation of dust.

Other information : This material and its container must be disposed of in a safe way, and as per local legislation.

For further information refer to section 13

SECTION 7 Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin, eyes and clothing. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged inhalation of vapors. Do not taste or swallow. Wear personal protective equipment. Ensure good ventilation of the work station. Handle and open container with care. Avoid contact with hot surfaces. Do not spray on an open flame or other ignition source. Protect material from direct sunlight. Handle in accordance with good industrial hygiene and safety practice. Danger of serious damage to health by prolonged exposure.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

Additional hazards when processed : Not expected to present a significant hazard under anticipated conditions of normal use.

7.2. Conditions for safe storage, including incompatibilities

Storage conditions : Store locked up. Protect container from damage and heat. Keep out of reach of children. Store tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

Packaging materials : Store always product in container of same material as original container.

SECTION 8 Exposure controls/personal protection

8.1. Control parameters

Asphalt (8052-42-4)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	0.5 mg/m³ (fume, inhalable particulate matter)
Remark (ACGIH)	TLV® Basis: URT & eye irr. Notations: A4 (Not classifiable as a Human Carcinogen); BEIP
ACGIH chemical category	Not Classifiable as a Human Carcinogen fume, coal tar-free
Regulatory reference	ACGIH 2024
USA - ACGIH - Biological Exposure Indices	
BEI	2.5 µg/l Parameter: 1-Hydroxypyrene with hydrolysis - Medium: urine - Sampling time: end of shift at end of workweek (background)
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL C	5 mg/m³ (fume)

8.2. Appropriate engineering controls

Appropriate engineering controls : 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.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures, such as personal protective equipment

Hand protection:

Wear heat-protective gloves. Confirm with a reputable supplier first.

Eye protection:

Wear safety glasses with side shields (or goggles).

Skin and body protection:

For molten product, use any type rubber thermal insulating gloves and other clothing as necessary to protect from thermal burns. If clothing or footwear becomes contaminated with the product, remove it immediately and completely decontaminate it before re-use, or discard it. Wear suitable protective clothing. As required by employer code.

Respiratory protection:

Do not attempt rescue of a hydrogen sulfide 'knockdown' victim without the use of proper
respiratory protective equipment. Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.
Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2).

SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Viscous semi-solid at room temperature.
Color	:	Brown to black
Odor	:	Asphalt
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Freezing point	:	Not applicable
Boiling point	:	> 470 °C (> 878 °F)
Flash point	:	> 230 °C Not applicable
Flammability (solid, gas)	:	Not applicable.
Vapor pressure	:	Nil at 37.8ºC (100ºF)
Relative vapor density at 20°C	:	No data available
Relative density	:	> 1
Solubility	:	Insoluble in alcohol, acids and alkalis. Soluble in oil turpentine, petroleum, carbon disulphide, chloroform, ether and acetone.
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	> 370 °C Not applicable
Decomposition temperature	:	No data available
Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	150 – 2500 cP
Explosion limits	:	Not applicable
Explosive properties	:	Not explosive.
Oxidizing properties	:	Not oxidising.
Particle characteristics	:	No data available

9.2. Data relevant with regard to physical hazard classes (supplemental)

No additional information available

SECTION 10 Stability and reactivity

10.1. Reactivity

May react with incompatible materials.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Keep away from heat and direct sunlight. Do not mix with other chemicals. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources, unless using as instructed.

10.5. Incompatible materials

Oxidizer. Fluorine.

10.6. Hazardous decomposition products

May include and are not limited to: oxides of carbon. Nitrogen oxides. Sulphur oxides. Polycyclic-aromatic hydrocarbons (PAH). Hydrogen sulphide.

SECTION 11 Toxicological information

Likely routes of exposure : Skin and eye contact. Ingestion. Inhalation.

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Paving Grades Group 1 Bitumar USA US USA017	
Unknown acute toxicity (GHS US)	Not applicable

Asphalt (8052-42-4)	
LD50 oral rat	> 5000 mg/kg (Source: ECHA)
LD50 dermal rabbit	> 2000 mg/kg (Source: ECHA)
LC50 Inhalation - Rat	> 94.4 mg/m³ (Exposure time: 4.5 h Source: NLM_HSDB)

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified

Carcinogenicity : Suspected of causing cancer.

Asphalt (8052-42-4)	
IARC group	2B - Possibly carcinogenic to humans
In OSHA Hazard Communication Carcinogen list	Yes

Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified
Symptoms/effects after inhalation : Inhalation of vapour can cause respiratory tract irritation or chemical burns. Vapours have a narcotic effect and may cause headache, fatigue, dizziness and nausea. In high concentrations, hydrogen sulphide may produce pulmonary edema and respiratory depression or paralysis. Dusts may irritate the respiratory tract, skin and eyes. Direct contact can produce thermal burns.
Symptoms/effects after skin contact : Prolonged or repeated contact may dry skin and cause irritation. Dust or powder may irritate the skin. Contact with molten material may cause thermal burns.
Symptoms/effects after eye contact : Direct contact with eyes may cause temporary irritation. Dust or powder may irritate the eyes. Contact with molten material may cause thermal burns.
Symptoms/effects after ingestion : Not a normal route of exposure. May cause stomach distress, nausea or vomiting. Contact with molten material may cause thermal burns.
Chronic symptoms : Prolonged inhalation may be harmful. Chronic exposure causes liver and kidney damages. Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure.

SECTION 12 Ecological information

12.1. Ecotoxicity

Ecology - general : See below for route-specific details.
Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

12.2. Persistence and degradability

Paving Grades Group 1 Bitumar USA US USA017	
Persistence and degradability	Rapidly degradable

Asphalt (8052-42-4)	
Persistence and degradability	Rapidly degradable

12.3. Bioaccumulative potential

Asphalt (8052-42-4)	
BCF - Fish [1]	(no bioaccumulation expected)
Partition coefficient n-octanol/water (Log Pow)	> 6

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Ozone : Not classified

Fluorinated greenhouse gases : No

SECTION 13 Disposal considerations

Waste treatment methods : Allow product to cool and solidify. Dispose of the material collected according to regulations.

Sewage disposal recommendations : Disposal must be done according to official regulations.

Product/Packaging disposal recommendations : Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling, disposal or collection.

SECTION 14 Transport information

In accordance with DOT

DOT
14.1. UN number
UN3257
14.2. Proper Shipping Name
Elevated temperature liquid, n.o.s.
14.3. Transport hazard class(es)
9

14.4. Packing group
III

DOT
14.5. Environmental hazards
Dangerous for the environment: No
No supplementary information available

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT

UN-No. (DOT)	:	UN3257
DOT Special Provisions (49 CFR 172.102)	:	IB1 - Authorized IBCs: Metal (31A, 31B and 31N). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized. T3 - 2.65 178.274(d)(2) Normal..... 178.275(d)(2) TP3 - The maximum degree of filling (in %) for solids transported above their melting points and for elevated temperature liquids shall be determined by the following: Degree of filling = 95 * dr / df Where: df and dr are the mean densities of the liquid at the mean temperature of the liquid during filling and the maximum mean bulk temperature during transport respectively. TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.
DOT Packaging Bulk (49 CFR 173.xxx)	:	247
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	Forbidden
DOT Vessel Stowage Location	:	A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.
DOT Vessel Stowage Other	:	85 - Under deck stowage must be in mechanically ventilated space

SECTION 15 Regulatory information

15.1. Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

No additional information available

15.3. State regulations

WARNING: This product can expose you to Asphalt, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The entry for this component is under the generic listing of "Bitumens, extracts of steam-refined and air refined"

SECTION 16 Other information

According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

Revision date	:	8/25/2025
Issue date	:	2/3/2025
Other information	:	For an updated SDS, please contact the supplier or manufacturer listed on the first page of the document.

The information in the safety data sheet was written by Dell Tech Laboratories Ltd. (www.delltech.com) based on the best knowledge and experience currently available. Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

SAFETY DATA SHEET (SDS): GRANITE

SECTION I –IDENTIFICATION

PRODUCT IDENTIFIER	TRADE NAME	OTHER SYNONYMS
Granite	Crushed Stone	Aggregate, Manufactured Sand

RECOMMENDED USE AND RESTRICTION ON USE
Used for construction purposes
This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications.

MANUFACTURER/SUPPLIER INFORMATION
Luck Stone Corporation
P. O. Box 29682
Richmond, Virginia 23242
Phone: 804-784-6300
8 AM to 5 PM Eastern Time
Monday to Friday

For additional health, safety or regulatory information and other emergency situations, call 804-476-6405

SECTION II – HAZARD(S) IDENTIFICATION

HAZARD CLASSIFICATION:
Category 1A Carcinogen
Category 1 Specific Target Organ Toxicity (STOT) following repeated exposures
Category 1 Eye Damage
Category 1 Skin Corrosive

SIGNAL WORD: DANGER

HAZARD STATEMENTS:
May cause cancer by inhalation.
Causes damage to lungs, kidneys and autoimmune system through prolonged or repeated exposure by inhalation.
Causes severe skin burns and serious eye damage.

PRECAUTIONARY STATEMENTS
Do not handle until the safety information presented in this SDS has been read and understood.
Do not breathe dusts or mists. Do not eat, drink or smoke while manually handling this product. Wash skin thoroughly after manually handling.
If swallowed: Rinse mouth and do not induce vomiting.
If on skin (or hair): Rinse skin after manually handling and wash contaminated clothing if there is potential for direct skin contact before reuse.
If inhaled excessively: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do, and continue rinsing.
If exposed, concerned, unwell or irritation of the eyes, skin, mouth or throat/nasal passage persist: Get medical attention.
Wear eye protection and respiratory protection following this SDS, NIOSH guidelines and other applicable regulations. Use protective gloves if manually handling the product.

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

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

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

SECTION III – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO	% by weight (approx)
Silicon Dioxide, SiO_2[(1)]	7631-86-9	45-75
Aluminum Oxide, Al_2O_3	1344-28-1	10-20
Ferrous Oxide, FeO	1345-25-1	0-3
Ferric Oxide, Fe_2O_3	1309-37-1	2-15
Magnesium Oxide, MgO	1309-48-4	1-8
Calcium Oxide, CaO	1305-78-8	2-12
Sodium Oxide, Na_2O	1313-59-3	1-4
Potassium Oxide, K_2O	12136-45-7	1-5
Titanium Oxide, TiO_2	13463-67-7	0-3

(1): Typically contains crystalline silica and the composition varies naturally

SECTION IV – FIRST-AID MEASURES

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

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

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

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

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

Direct skin and eye contact with dust may cause irritation by mechanical abrasion. Some components of the product are also known to cause corrosive effects to skin, eyes and mucous membranes. Ingestion of large amounts may cause gastrointestinal irritation and blockage. Inhalation of dust may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion 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. Repeated excessive exposure may cause pneumoconiosis, such as silicosis and other respiratory effects.

SECTION V – FIRE-FIGHTING MEASURES

EXTINGUISHING AGENT
Not flammable; use extinguishing media compatible with surrounding fire.

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

SPECIAL FIRE FIGHTING PROCEDURES	HAZARDOUS COMBUSTION PRODUCTS
None known	None known

SECTION VI – ACCIDENTAL RELEASE MEASURES

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

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

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

SECTION VII – HANDLING AND STORAGE

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

Follow protective controls set forth in Section VIII of this SDS when handling this product. Dust containing respirable crystalline silica and other components that may be corrosive/irritant may be generated during processing, handling and storage. Use good housekeeping procedures to prevent the accumulation of dust in the workplace.

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

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

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

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

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

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne OELs for Components of Granite:

COMPONENT(S) CHEMICAL NAME	MSHA/OSHA PEL	ACGIH TLV-TWA	NIOSH REL
Silicon Dioxide, SiO_2	(R) 10 mg/m^3 /(% SiO_2 +2) §	(R) 0.025 mg/m^3 #	(R) 0.05 mg/m^3 #
Aluminum Oxide, Al_2O_3	(T) 15 mg/m^3, (R) 5 mg/m^3	(1) (R) 1 mg/m^3	-
Ferrous Oxide, FeO	-	-	-
Ferric Oxide, Fe_2O_3	(2) 10 mg/m^3	(R) 5 mg/m^3	(3) 5 mg/m^3
Magnesium Oxide, MgO	(4) 15 mg/m^3	(I) 10 mg/m^3	-
Calcium Oxide, CaO	5 mg/m^3	2 mg/m^3	2 mg/m^3
Sodium Oxide, Na_2O (5)	2 mg/m^3	(C) 2 mg/m^3	(C) 2 mg/m^3
Potassium Oxide, K_2O	-	(6) (C) 2 mg/m^3	(6) (C) 2 mg/m^3
Titanium Oxide, TiO_2	15 mg/m^3	10 mg/m^3	-

§: Crystalline silica is normally measured as respirable dust. The OSHA/MSHA standard also presents a formula for calculation of the PEL based on total dust: 30 mg/m^3 / (% SiO_2 +2). The OSHA/MSHA PEL listed is for dust containing crystalline silica (quartz) and is based on the silica content of the respirable dust sample. The OSHA/MSHA PEL for crystalline silica as tridymite and cristobalite is one-half the PEL for crystalline silica (quartz).
The ACGIH and NIOSH limits are for crystalline silica (quartz), independent of the dust concentration. The ACGIH TLV for crystalline silica as cristobalite is equal to the TLV for crystalline silica as quartz. In 2005, ACGIH withdrew the TLV for crystalline silica as tridymite. Refer to Section X for thermal stability information for crystalline silica (quartz).
(1): Limits based on Aluminum Metal and Insoluble Compounds.
(2): As Iron Oxide Fume.
(3): Dust and fume, as Iron
(4): As Magnesium Oxide Fume Total Particulate.
(5): Based on Sodium Hydroxide.
(6): Based on Potassium Hydroxide.
(R): Respirable Fraction.
(T): Total Dust.
(I): Inhalable Fraction.
(C): Ceiling Limit

Airborne OELs for Inert/Nuisance Dust:

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

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

ENGINEERING CONTROLS

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

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

EYE/FACE PROTECTION

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

SKIN PROTECTION

Use appropriate protective gloves if manually handling the product.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION, CONTD.

RESPIRATORY PROTECTION
Respirator Recommendations:

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

NIOSH recommendations for respiratory protection for crystalline silica include:
Up to 0.5 mg/m^3:
(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100.
Up to 1.25 mg/m^3:
(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate (100-series) filter.
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
Up to 2.5 mg/m^3:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter
Up to 25 mg/m^3:
(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

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

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

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

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

SECTION IX— PHYSICAL AND CHEMICAL PROPERTIES	
APPEARANCE Granite is a mixture of angular particles, generally grey but can be multi-colored, ranging in size from sand to boulders.	ODOR AND ODOR THRESHOLD Odorless and not applicable
pH AND VISCOSITY Not applicable	MELTING POINT/FREEZING POINT Not applicable
BOILING POINT AND RANGE Not applicable	FLASH POINT AND FLAMMABILITY Not applicable
FLAMMABILITY/EXPLOSIVE LIMITS AND AUTOIGNITION TEMPERATURE Not applicable	EVAPORATION RATE AND DECOMPOSITION TEMPERATURE Not applicable
VAPOR PRESSURE AND VAPOR DENSITY IN AIR Not applicable	SPECIFIC GRAVITY. 2.55-2.8
SOLUBILITY IN WATER Negligible	PARTITION COEFFICIENT: N-OCTANOL/WATER Not applicable

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

SECTION XI – TOXICOLOGICAL INFORMATION

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

Primary routes(s) of exposure: ■ Inhalation • Skin ■ Ingestion

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

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

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

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

SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.

INHALATION: Dust may irritate nose, throat, mucous membranes 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.

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

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

Silicon Dioxide: It is comprised of amorphous and crystalline forms of silica.

Exposure route: Eyes, respiratory system.

Target organs: Eyes, skin, respiratory system.

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

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

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

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

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

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

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

SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.

B. CANCER

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

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

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

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

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

C. AUTOIMMUNE DISEASES

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

D. TUBERCULOSIS

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

E. KIDNEY DISEASE

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

SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.

F. NON-MALIGNANT RESPIRATORY DISEASES

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

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

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

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

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

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

Sodium Oxide:

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

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

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

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

Iron Oxide: (Ferrous and Ferric Oxides)
Exposure route: Inhalation, ingestion, skin

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

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

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

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

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

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

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.

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

Target organs: Eyes, skin, respiratory system.

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

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

Magnesium Oxide:
Exposure route: Inhalation, eye/skin contact.

Target organs: Eyes, respiratory system.

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

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

Titanium Oxide:
Exposure route: inhalation.

Target organs: respiratory system

Acute effect: Toxicological studies have concluded that titanium oxide is inert, not absorbed by the body, and exerts no toxic effect.

Chronic effect/carcinogenicity: Classified as Group 2B-possibly carcinogenic to humans by IARC

Acute Toxicity Estimates for Granite – Not Available

SECTION XII – ECOLOGICAL INFORMATION

No data available for this product**.**

SECTION XIII – DISPOSAL CONSIDERATIONS

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

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

SECTION XIV – TRANSPORT INFORMATION

DOT HAZARD CLASSIFICATION
None

PLACARD REQUIRED
None

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

SECTION XV – REGULATORY INFORMATION

OSHA: Crystalline Silica is not listed as a carcinogen.
SARA Title III: Section 311 and 312: Immediate health hazard and delayed health hazard.
TSCA.: All components of the product appear on the EPA TSCA chemical substance inventory.
RCRA: The product is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.
CERCLA: The product is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 40 CFR §302.4
EPCRA (Emergency Planning and Community Right to Know Act): The product is not an extremely hazardous substance under regulations of the Emergency Planning and Community Right to Know Act, 40 CFR Part 355, Appendices A and B and is not a toxic chemical subject to the requirements of Section 313.
Clean Air Act: Crystalline silica (quartz) mined and processed by Luck Stone Corporation was not processed with or does not contain any Class I or Class II ozone depleting substances.
FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3).(The FDA standard primarily applies to products containing silica used in the coatings of food contact surfaces).
California Proposition 65: Respirable crystalline silica and titanium dioxide is classified as a substance known to the state of California to be a carcinogen.

SECTION XVI – OTHER INFORMATION

DEFINITIONS OF ACRONYMS/ABBREVIATIONS

ACGIH: American Conference of Governmental Industrial Hygienists
ANSI: American National Standards Institute
APF: Assigned Protection Factor
California REL: California Inhalation Reference Exposure Limit
CAS: Chemical Abstracts Service
CERCLA: Comprehensive Environmental Response, Compensation and Liability Act
CFR: US Code of Federal Regulations
DHHS: Department of Health and Human Services
EPA: Environmental Protection Agency
EPCRA: Emergency Planning and Community Right to Know Act
FDA: Food and Drug Administration
GHS: Globally Harmonized System
HEPA: High-Efficiency Particulate Air
IARC: International Agency for Research on Cancer
IDLH: Immediately Dangerous to Life and Health
MSHA: Mine Safety and Health Administration
NIOSH: National Institute for Occupational Safety and Health, US Department of Health and Human Services
NIOSH REL: NIOSH Recommended Exposure Limit
NTP: National Toxicology Program
OEL: Occupational Exposure Limit
OSHA: Occupational Safety and Health Administration, US Department of Labor
PEL: Permissible Exposure Limit
PMF: Progressive Massive Fibrosis
RCRA: Resource Conservation and Recovery Act
SARA Title III: Title III of the Superfund Amendments and Reauthorization Act, 1986
SDS: Safety Data Sheet
STOT: Specific Target Organ Toxicity
TLV: Threshold Limit Value
TSCA: Toxic Substance Control Act
TWA: Time-Weighted Average

SECTION XVI – OTHER INFORMATION, CONTD.

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

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

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

DATE OF PREPARATION 5/2015 REPLACES 5/2001

SAFETY DATA SHEET (SDS): LIMESTONE/DOLOMITE

SECTION I –IDENTIFICATION

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

RECOMMENDED USE AND RESTRICTION ON USE
Used for construction purposes.
This product is not intended or designed for, and should not be used as an abrasive blasting medium or for foundry applications.

MANUFACTURER/SUPPLIER INFORMATION
Martin Marietta
4123 Parklake Ave
Raleigh, North Carolina 27612
Phone: 919-781-4550

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

SECTION II – HAZARD(S) IDENTIFICATION

HAZARD CLASSIFICATION:
Category 1A Carcinogen
Category 1 Specific Target Organ Toxicity (STOT) following repeated exposures
Category 1 Serious Eye Damage
Category 2 Skin Irritant

SIGNAL WORD: DANGER

HAZARD STATEMENTS:
May cause cancer by inhalation.
Causes damage to lungs, kidneys and autoimmune system through prolonged or repeated exposure by inhalation.
Causes skin irritation and serious eye damage.

PRECAUTIONARY STATEMENTS
Do not handle this product until the safety information presented in this SDS has been read and understood.
Do not breathe dusts or mists generated by this product. Do not eat, drink or smoke while manually handling this product.

If on skin: Rinse skin thoroughly after manually handling and wash contaminated clothing if there is potential for direct skin contact before reuse.
If swallowed: If gastrointestinal discomfort occurs and if the person is conscious, give a large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit.
If inhaled excessively: Remove the person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do, and continue rinsing.
If exposed, concerned, unwell or irritation of the eyes, skin, mouth or throat/nasal passage persist or develop later: Get medical attention.
Wear eye protection and respiratory protection following this SDS, National Institute for Occupational Safety and Health (NIOSH) guidelines and other applicable regulations. Use protective gloves if manually handling the product.

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

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

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

SECTION III – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO	% By weight (approx)[1]
Calcium Carbonate, $CaCO_3$	1317-65-3	30-100
Magnesium Carbonate, $MgCO_3$	546-93-0	0.1-60
Calcium Oxide, CaO	1305-78-8	0.1-40
Magnesium Oxide, MgO	1309-48-4	0.1-30
Silicon Dioxide[2], SiO_2	7631-86-9/14808-60-7	0.1-60
Aluminum Oxide, Al_2O_3	1344-28-1	0.1-1
Ferric Oxide, Fe_2O_3	1309-37-1	0.1-1.5
Sodium Oxide, Na_2O	1313-59-3	0.1-1
Potassium Oxide, K_2O	12136-45-7	0.1-1

1: The composition varies naturally; 2: The composition of SiO_2 may be up to 100% crystalline silica

SECTION IV – FIRST-AID MEASURES

INHALATION: If excessive inhalation occurs, move the person to fresh air. Dust in the throat and nasal passages should clear spontaneously. Contact a physician if breathing difficulty is experienced, or irritation persists or develops later.

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

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

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

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

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

SECTION V – FIRE-FIGHTING MEASURES

EXTINGUISHING AGENT
Not flammable; use extinguishing media compatible with surrounding fire.

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

SPECIAL FIRE FIGHTING PROCEDURES	HAZARDOUS COMBUSTION PRODUCTS
None known	None known

SECTION VI – ACCIDENTAL RELEASE MEASURES

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

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

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

SECTION VII – HANDLING AND STORAGE

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

Follow protective controls set forth in Section VIII of this SDS when handling this product. Dust containing RCS and other components that may be corrosive/irritant may be generated during processing, handling and storage. Use good housekeeping procedures to prevent the accumulation of dust in the workplace.

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

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

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

See also ASTM International standard practice E 1132-13E1, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica."

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

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne OELs for Components of Limestone/Dolomite:

COMPONENT(S) CHEMICAL NAME	OSHA PEL[1]	MSHA PEL[2]	ACGIH TLV-TWA[3]	NIOSH REL[4]
Calcium Carbonate, $CaCO_3$	[T]15 mg/m^3, [R]5 mg/m^3	[5,T]10 mg/m^3	-	[T]10 mg/m^3, [R]5 mg/m^3
Magnesium Carbonate, $MgCO_3$	[6, T]15 mg/m^3, [R]5 mg/m^3	-	-	[6, T]10 mg/m^3, [R]5 mg/m^3
Calcium Oxide, CaO	5 mg/m^3	5 mg/m^3	2 mg/m^3	2 mg/m^3
Magnesium Oxide, MgO	[7]15 mg/m^3	[7]10 mg/m^3	[I]10 mg/m^3	-
Silicon Dioxide[8], SiO_2	[9, R]0.05 mg/m^3 [10, R]10 mg/m^3/(% SiO_2+2)	[R, 11]0.05 mg/m^3	[R, 12]0.025 mg/m^3	[R, 13]0.05 mg/m^3
Aluminum Oxide, Al_2O_3	-	[14]10 mg/m^3	[15, R]1 mg/m^3	-
Ferric Oxide, Fe_2O_3	[16]10 mg/m^3	[16]10 mg/m^3	[R]5 mg/m^3	[17]5 mg/m^3
Sodium Oxide[18], Na_2O	2 mg/m^3	[C]2 mg/m^3	[C]2 mg/m^3	[C]2 mg/m^3
Potassium Oxide[19], K_2O	-	-	[C]2 mg/m^3	[C]2 mg/m^3

1: OSHA's Permissible Exposure Limits - Annotated Tables Z-1 and Z-3
2: MSHA Handbook Series, Handbook Number PH20-V-4, Health Inspection Procedures Handbook, Attachment - Contaminant Index, December 2020
3: 2024 ACGIH TLVs and BEIs Based on Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents
4: NIOSH Pocket Guide to Chemical Hazards, last reviewed February 18, 2020
5: If respirable fraction is >1% quartz, then MSHA PEL is 10 mg/m^3/(% SiO_2 +2)
6: Listed as Magnesite, a naturally occurring form of $MgCO_3$
7: As Magnesium Oxide Fume
8: The OELs provided are for crystalline silica. Refer to Section X for thermal stability information.
9: OSHA has also established an action level (AL) of 0.025 mg/m^3 for RCS.
10: This standard applies to any operations or sectors for which the RCS standard, 1910.1053, is stayed or is otherwise not in effect. If the formula is used for PEL calculation, then the PEL for cristobalite and tridymite is half the value of quartz PEL.
11: The MSHA Standard for Lowering Miners' Exposure to Respirable Crystalline Silica and Improving Respiratory Protection was issued on April 18, 2024, was effective from June 17, 2024 and has a compliance date of April 8, 2026 for metal and nonmetal operators. The MSHA PEL for RCS, starting April 8, 2026 is presented in the table and the AL will be 0.025 mg/m^3. Until then, the limit for silica-containing dust of 10 mg/m^3/(% SiO_2+2) will be applicable.
12: The ACGIH TLV for RCS as cristobalite is equal to the TLV for quartz. In 2005, ACGIH withdrew the TLV for tridymite.
13: The NIOSH REL for crystalline silica as cristobalite and tridymite is the same as for quartz.
14: Dust and Fume
15: Limits based on Aluminum Metal and Insoluble Compounds
16: As Iron Oxide Fume
17: Dust and fume, as Iron
18: Based on Sodium Hydroxide
19: Based on Potassium Hydroxide
R: Respirable Fraction
T: Total Dust
I: Inhalable Fraction
C: Ceiling Limit

Airborne OELs for Inert/Nuisance Dust:

Standard	Respirable Dust	Total Dust
OSHA PEL (as Inert or Nuisance Dust or Particulates Not Otherwise Regulated)	5 mg/m^3	15 mg/m^3
MSHA PEL (Dust < 1% quartz)	10 mg/m^3	10 mg/m^3
ACGIH TLV (as Particles Not Otherwise Specified)	3 mg/m^3	*10 mg/m^3

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

ENGINEERING CONTROLS

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

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION, CONT'D.

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

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

SKIN PROTECTION
Use appropriate protective gloves if manually handling the product.

RESPIRATORY PROTECTION
Respirator Recommendations:

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

Emergency or planned entry into unknown concentrations or immediately dangerous to life or health (IDLH) conditions: A self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

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

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

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

SECTION IX— PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE Mixture of fine to coarse particles	COLOR White to gray
ODOR Odorless to musty odor	MELTING POINT/FREEZING POINT Not applicable
BOILING POINT AND RANGE Not applicable	FLAMMABILITY Not flammable
LOWER AND UPPER EXPLOSION LIMIT/ FLAMMABILITY LIMIT Not applicable	FLASH POINT Not applicable

SECTION IX— PHYSICAL AND CHEMICAL PROPERTIES, CONT'D	
AUTOIGNITION TEMPERATURE Not applicable	DECOMPOSITION TEMPERATURE Not applicable
pH Not applicable	KINEMATIC VISCOSITY Not applicable
SOLUBILITY IN WATER Insoluble	PARTITION COEFFICIENT: N-OCTANOL/WATER Not applicable
VAPOR PRESSURE Not applicable	DENSITY/RELATIVE DENSITY 2.5-2.82
RELATIVE VAPOR DENSITY Not applicable	PARTICLE CHARACTERISTICS Angular particles ranging in size from powder to small stones

SECTION X – STABILITY AND REACTIVITY	
STABILITY Stable	CONDITIONS TO AVOID Contact with incompatible materials (see below).
THERMAL STABILITY If crystalline silica (quartz) is heated to more than 870°C (1598°F), it can change to a form of crystalline silica known as tridymite, and if crystalline silica (quartz) is heated to more than 1470°C (2678°F), it can change to a form of crystalline silica known as cristobalite.	
INCOMPATIBILITY (Materials to avoid) Contact of quartz with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. One of the components rapidly reacts with hydrochloric acid to form carbon dioxide and magnesium chloride. While individual components are known to react vigorously with water to produce heat, this is not expected from the product.	
HAZARDOUS DECOMPOSITION PRODUCTS Silica dissolves in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.	
HAZARDOUS POLYMERIZATION Not known to polymerize	

SECTION XI – TOXICOLOGICAL INFORMATION

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

Primary routes(s) of exposure: ■ Inhalation □ Skin ■ Ingestion

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

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

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

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

INHALATION: Dust generated from this product may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion and/or irritant action. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, fibrosis and flu-like fever may occur following exposures in excess of appropriate OELs.

SECTION XI – TOXICOLOGICAL INFORMATION, CONT'D.

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

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

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

Exposure route: Eyes, respiratory system.

Target organs: Eyes, skin, respiratory system.

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

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

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

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

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

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

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

B. CANCER
IARC - The International Agency for Research on Cancer ("IARC") concluded that there is "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the form of quartz or cristobalite," there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz dust," and that there is "*limited evidence* in experimental animals for the carcinogenicity of tridymite dust

SECTION XI – TOXICOLOGICAL INFORMATION, CONT'D.

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

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

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

There have been many articles published on the carcinogenicity of crystalline silica, which the reader should consult for additional information; the following are examples of recently published articles: (1) "The Effect of Silica Exposure on the Risk of Lung Cancer: A Dose-Response Meta-Analysis", *Cancer Epidemiology*, (75) 102024 (2021); (2) "Dose-Response Meta-Analysis of Silica and Lung Cancer", *Cancer Causes Control*, (20):925-33 (2009); (3) "Occupational Silica Exposure and Lung Cancer Risk: A Review of Epidemiological Studies 1996-2005", *Ann Oncol*, (17) 1039-50 (2006); (4) "Lung Cancer Among Industrial Sand Workers Exposed to Crystalline Silica", *Am J Epidemiol*, (153) 695-703 (2001); (5) "Is Silicosis Required for Silica-Associated Lung Cancer?", *American Journal of Industrial Medicine*, (37) 252- 259 (2000); (6) " Silica, Silicosis, and Lung Cancer: A Risk Assessment", *American Journal of Industrial Medicine*, (38) 8-18 (2000); (7) "Silica, Silicosis, and Lung Cancer: A Response to a Recent Working Group Report", *Journal of Occupational and Environmental Medicine*, (42) 704-720 (2000); (8) "Crystalline Silica and The Risk of Lung Cancer in The Potteries", *Occup Environ Med*, (55) 779-785 (1998).

C. AUTOIMMUNE DISEASES

There is evidence that exposure to RCS (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders including: scleroderma, systemic lupus erythematosus, rheumatoid arthritis, and diseases affecting the kidneys. For a review of the subject, the following may be consulted: (1) "Systematic Review and Meta-Analysis on the Association of Occupational Exposure to Free Crystalline Silica and Rheumatoid Arthritis", *Clin Rev Allergy Immunol*, (62) 333-345 (2022); (2) "Systematic review and Meta-Analysis of Epidemiological Studies on the Association of Occupational Exposure to Free Crystalline Silica and Systemic Lupus Erythematosus", (60) 81-91 (2021); (3) "The Association between Occupational Exposure to Silica and Risk of Developing Rheumatoid Arthritis: A Meta-Analysis", *Saf Health Work*, (11) 136-142 (2020); (4) "Occupational Silica Exposure as a Risk Factor for Scleroderma: A Meta-Analysis", *Int Arch Occup Environ Health*, (83) 763-9 (2010); (5) "Antinuclear Antibody and Rheumatoid Factor in Silica-Exposed Workers", *Arh Hig Rada Toksikol*, (60) 185-90 (2009); (6) "Occupational Exposure to Crystalline Silica and Autoimmune Disease", *Environmental Health Perspectives*, (107) Supplement 5, 793-802 (1999); (7) "Occupational Scleroderma", *Current Opinion in Rheumatology*, (11) 490-494 (1999); (8) "Connective Tissue Disease and Silicosis", *Am J Ind Med*, (35), 375-381 (1999).

D. TUBERCULOSIS

Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to persons with tuberculosis. The following may be consulted for further information: (1) "The Association between Silica Exposure, Silicosis and Tuberculosis: A Systematic Review and Meta-Analysis", *BMC Public Health*, (21) 953 (2021); (2) "Tuberculosis and Silicosis: Epidemiology, Diagnosis and Chemoprophylaxis", *J Bras Pneumol*, (34) 959-66 (2008); (3) *Occupational Lung Disorders*, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994); (4) "Risk of Pulmonary Tuberculosis Relative to Silicosis and Exposure to Silica Dust in South African Gold Miners," *Occup Environ Med*, (55) 496-502 (1998); (5) "Occupational Risk Factors for Developing Tuberculosis", *Am J Ind Med*, (30) 148-154 (1996).

E. KIDNEY DISEASE

There is evidence that exposure to RCS (without silicosis) or that the disease silicosis is associated with the increased incidence of kidney diseases, including end stage renal disease. For additional information on the subject, the following may be consulted: (1) "Occupational Exposure to Respirable Crystalline Silica and Chronic Non-Malignant Renal Disease: Systematic Review and

SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.

Meta-Analysis", *Int Arch Occup Environ Health*, (90) 555-574 (2017); (2) "Mortality from Lung and Kidney Disease in a Cohort of North American Industrial Sand Workers: An Update", *Ann Occup Hyg*, (49) 367-73 (2005); (3) "Kidney Disease and Arthritis in a Cohort Study of Workers Exposed to Silica", *Epidemiology*, (12) 405-412 (2001); (4) "Kidney Disease and Silicosis", *Nephron*, (85) 14-19 (2000); (5) "End Stage Renal Disease Among Ceramic Workers Exposed to Silica", *Occup Environ Med*, (56) 559-561 (1999).

F. NON-MALIGNANT RESPIRATORY DISEASES
NIOSH has cited the results of studies that report an association between dusts found in various mining operations and non-malignant respiratory disease, particularly among smokers, including bronchitis, emphysema, and small airways disease. For additional information on the subject, the following may be consulted:"Respirable Quartz Dust Exposure and Airway Obstruction: A Systematic Review and Meta-Analysis", *Occup Environ Med*, (71) 583-9 (2014); "NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica", (2002), available from NIOSH, 4676 Columbia Parkway, Cincinnati, OH 45226.

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.

More information on the effects of crystalline silica exposure may be obtained from OSHA (website: http://www.osha.gov) or from NIOSH (website: http://www.cdc.gov/niosh).

Calcium Carbonate:

Exposure route: Inhalation, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: Irritation of the eyes, skin and respiratory system and cough. It has been reported that there may be a silicosis risk when using impure $CaCO_3$ containing in excess of 3% quartz. However, it is claimed that pure $CaCO_3$ does not cause pneumoconiosis. Adverse health effects have generally not been reported in literature among workers using $CaCO_3$.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

Magnesium Carbonate:

Exposure route: Inhalation.

Target organs: Respiratory system.

Acute effect: A nuisance-causing concentration of airborne particles can be reached quickly when dispersed.

Chronic effect/carcinogenicity: Lungs may be affected by repeated or prolonged exposure to dust particles. Animal experiments show that $MgCO_3$ dust may produce a slight fibrosis and after prolonged exposure to high concentrations, pulmonary deposition and retention may occur. Not classifiable as human carcinogen.

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

Target organs: Eyes, skin, respiratory system.

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

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

SECTION XI – TOXICOLOGICAL INFORMATION, CONT'D.

Magnesium Oxide:

Exposure route: Inhalation, eye/skin contact.

Target organs: Eyes, respiratory system.

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

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

Aluminum Oxide:

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

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

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

Chronic effect/carcinogenicity: Al_2O_3 is not classifiable as a human carcinogen. On occasion, workers chronically exposed to aluminum-containing dusts or fumes have developed severe pulmonary reactions including fibrosis, emphysema and pneumothorax. Long-term exposure may have effects on the central nervous system.

Iron Oxide: (Ferric Oxide)

Exposure route: Inhalation, ingestion, skin.

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

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

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

Sodium Oxide:

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

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

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

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

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

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

SECTION XI – TOXICOLOGICAL INFORMATION, CONT'D.

Potassium Oxide, cont'd:

Acute effect: Corrosive – K_2O reacts violently with water to produce potassium hydroxide. If inhaled, it causes sore throat, cough, burning sensation and shortness of breath. Contact with skin produces pain and blisters. Severe deep burns, redness and pain occur with eye contact. Ingestion results in burning sensations, abdominal pain, shock or collapse.

Chronic effect/carcinogenicity: Not classifiable as human carcinogen.

Acute Toxicity Estimates for Limestone/Dolomite – Not Available

SECTION XII – ECOLOGICAL INFORMATION

No data available for this product.

SECTION XIII – DISPOSAL CONSIDERATIONS

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

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

SECTION XIV – TRANSPORT INFORMATION

DOT HAZARD CLASSIFICATION
None

PLACARD REQUIRED
None

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

SECTION XV – REGULATORY INFORMATION

SARA Title III: Section 311 and 312: Immediate health hazard and delayed health hazard.
TSCA.: All components of the product appear on the EPA TSCA chemical substance inventory.
RCRA: The product is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.
CERCLA: The product is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 40 CFR §302.4
EPCRA (Emergency Planning and Community Right to Know Act): The product is not an extremely hazardous substance under regulations of the Emergency Planning and Community Right to Know Act, 40 CFR Part 355, Appendices A and B and is not a toxic chemical subject to the requirements of Section 313.
Clean Air Act: This product mined and processed by Martin Marietta was not processed with or does not contain any Class I or Class II ozone depleting substances.
FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3) (The FDA standard primarily applies to products containing silica used in the coatings of food contact surfaces).
California Proposition 65: ⚠ WARNING: This product can expose you to chemicals including crystalline silica, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov

SECTION XVI – OTHER INFORMATION

DEFINITIONS OF ACRONYMS/ABBREVIATIONS

ACGIH: American Conference of Governmental Industrial Hygienists
ANSI: American National Standards Institute
ASTM: American Society for Testing and Materials
BEIs: Biological Exposure Indices
CAS: Chemical Abstracts Service
CERCLA: Comprehensive Environmental Response, Compensation and Liability Act
CFR: US Code of Federal Regulations
DHHS: Department of Health and Human Services
EPA: Environmental Protection Agency
EPCRA: Emergency Planning and Community Right to Know Act
FDA: Food and Drug Administration
HEPA: High-Efficiency Particulate Air
IARC: International Agency for Research on Cancer
IDLH: Immediately Dangerous to Life and Health
MSHA: Mine Safety and Health Administration
NIOSH: National Institute for Occupational Safety and Health, US Department of Health and Human Services
NTP: National Toxicology Program
OEL: Occupational Exposure Limit
OSHA: Occupational Safety and Health Administration, US Department of Labor
PEL: Permissible Exposure Limit
PMF: Progressive Massive Fibrosis
PPE: Personal Protective Equipment
RCRA: Resource Conservation and Recovery Act
RCS: Respirable Crystalline Silica
REL: Recommended Exposure Limit
SARA Title III: Title III of the Superfund Amendments and Reauthorization Act, 1986
SCBA: Self-Contained Breathing Apparatus
SDS: Safety Data Sheet
STOT: Specific Target Organ Toxicity
TLV: Threshold Limit Value
TSCA: Toxic Substance Control Act
TWA: Time-Weighted Average

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

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

An electronic version of this SDS is available at www.martinmarietta.com.

DATE OF PREPARATION 8/2024 REPLACES 6/2023

Austinville Limestone Co. Inc.
223 Newtown Church Rd PO Box 569 Austinville
VA 24312
Tel: +1 276 699-6262
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SAFETY DATA SHEET
Fast-Acting Limestone Pellets

1. IDENTIFICATION

Product Names:
LimeLite, LimeLite Pro, LimeLite Pro Cal

Identified uses:	Acid Soil Treatment
Manufacturer:	Austinville Limestone Co. 223 Newtown Church Rd, Austinville VA 24312
Manufacturing Site:	Austinville Virginia, USA
Emergency Telephone:	+1 (800) 451-8346 3E Company

2. HAZARD(S) IDENTIFICATION

GHS Classification:	Physical and Chemical Hazards:	Not classified.
	Human Health:	Quartz: STOT RE 1 – H372.
	Environment:	Not classified.

GHS Pictogram:

Signal Word:	Danger
Hazard Statement:	H372 Causes damage to lungs through prolonged or repeated exposure via inhalation.
Precautionary Statements:	P260 Do not breathe dust. P285 In case of inadequate ventilation wear respiratory protection. P501 Dispose of contents/containers in accordance with local regulations.

Long term exposure to crystalline silica can cause lung injury (silicosis). IARC and NTP have determined that crystalline silica inhaled from occupational sources can cause cancer in humans. Risk of injury is dependent on the duration and level of exposure.

3. COMPOSITION / INGREDIENTS

Ground Limestone (Calcium Carbonate)		**>94%**
CAS No.: 1317-65-3	EC No.:	
GHS Classification:	Not classified.	
Quartz		**<1%**
CAS No.: 14808-60-7	EC No.: 238-878-4	
GHS Classification:	STOT RE 1 – H372	
Ammonium Lignin Sulfonate		**<3%**
CAS No.: 8061-53-8	EC No.:	
GHS Classification:	Not classified.	
Sodium Gluconate (chelating agent)		**2%**
CAS No.: 527-07-01	EC No.:	
Classification:	Not classified.	

4. FIRST-AID MEASURES

Description of first aid measures:

Inhalation:	Remove to fresh air.
Ingestion:	Drink plenty of water. Never give liquid to an unconscious person.
Skin Contact:	Wash skin thoroughly with soap and water.
Eye Contact:	Immediately rinse with water for several minutes.

5. FIRE-FIGHTING MEASURES

Auto Ignition Temperature (°C)	Not applicable.
Flammability Limit – Lower (%)	Not applicable.
Flammability Limit – Upper (%)	Not applicable.
Flash point (°C)	Not applicable.
Extinguishing Media	The product is non-combustible.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Use proper respiratory and personal protective equipment. MSHA / NIOSH or OSHA / NIOSH approved respirator recommended. Spilled materials may cause slippery conditions when wet. Care should be exercised when walking on spills on floors or concrete pads.

Spill Clean Up Methods:

Vacuum, pump or scoop spilled material into containers for reclaiming or disposal. Do not discharge into drains, watercourses or onto the ground.

7. HANDLING AND STORAGE

Handling:
Minimize dust generation and accumulation. If excessive dust is generated, provide adequate ventilation and use proper respiratory and personal protective equipment.

Storage:
Store in a cool and well-ventilated place. Store away from acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component	Standard	TWA (8-hrs)
Limestone	PEL	15 mg/m^3
	ACGIH	2 mg/m^3
Quartz	PEL	0.1 mg/m^3
	ACGIH	0.025 mg/m^3
Ammonium Lignin Binder	PEL	15 mg/m^3
	ACGIH	

Component	IDLH
Quartz	25 mg/m^3

ACGIH: American Conference of Governmental Industrial Hygienists.

Engineering Measures:
Use exhaust ventilation, if required, to maintain dust concentration below recommended exposure limits.

Respiratory Equipment:
If respirator is required, use of a MSHA / NIOSH or OSHA / NIOSH approved respirator is recommended.

Hand Protection:
Rubber gloves are recommended for prolonged exposure.

Eye Protection:
Wear side shield safety glasses

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Granular.
Color:	Brown.
Odor:	Slightly woody odor.
Solubility:	Slightly soluble in water.
Boiling point and boiling range:	Not applicable.
Melting point:	Decomposes at ~825°C.
Flash point:	Not applicable.
Auto Ignition Temperature (°C):	Not applicable.
Flammability Limit – Lower (%):	Not applicable.
Flammability Limit – Upper (%):	Not applicable.

10. STABILITY AND REACTIVITY

Reaction with:	Acids.
Stability:	No particular stability concerns. Not applicable.
Conditions to Avoid:	Avoid contact with acids.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:	Acute Toxicity (Oral LD50)	6450 mg/kg Rat

12. ECOLOGICAL INFORMATION

Ecotoxicity:	The product is not expected to be hazardous to the environment.

13. DISPOSAL CONSIDERATIONS

Disposal Methods:	Under RCRA (40 CFR 261) ground limestone is a non-hazardous waste. Dispose of waste material in accordance with all local, state and federal requirements.

14. TRANSPORT INFORMATION

Environmentally Hazardous Substance / Marine Pollutant
No

15. REGULATORY INFORMATION

OSHA Hazard Communications Standard, 29 CFR 1910.1200: Material is considered hazardous. See Section 2.
RCRA: Material is not defined as a hazardous waste per 40 CFR 261.
CERCLA: Material is not reportable under CERCLA; local requirements may vary.
SARA: 311/312 Hazard Categories – Immediate and Delayed Health; 313 Reportable Ingredients – none.
California Proposition 65: This product contains chemicals known to the State of California to cause cancer.
EU REACh Regulations: Exempted in accordance with Annex V.7
WHIMIS: Limestone products do meet the criteria for WHMIS classification and are thus not included on the disclosure list

Additional regulatory information available on request

16. OTHER INFORMATION

HEALTH	1
FLAMMABILITY	0
PHYSICAL	0
PERSONAL PROTECTION	E

Disclaimer

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

Revision Date
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