Material Safety Data Sheet

Section 1: PRODUCT AND COMPANY INFORMATION

Product Name(s): Aggregate Products

Product Identifiers: Aggregates, Crushed Stone, Crushed Rock, Crushed Run, Gravel, Manufactured Sand, Concrete Sand, Asphalt Sand, Mason Sand, Fill Sand, Golf Course Sand, Bank Sand and Grave, Crushed Gravel, Round Gravel, Base Material, Dense Graded Aggregate, Quartz, Feldspar, Mica, Granite, Basalt, Gabbro, Sandstone, Shale, Limestone, Dolomite

Manufacturer:
Lafarge North America, Inc.
8700 West Bryn Mawr, Suite 300
Chicago, IL 60631

Information Telephone Number:
773-372-1000 (9am to 5pm CST)

Emergency Telephone Number:
1-800-451-8346 (3E Hotline)

Product Use: Aggregate is used in the manufacture of bricks, mortar, cement, concrete, plasters, paving materials, and other construction applications. Aggregate is distributed in bags, totes and bulk shipment.

DO NOT use this product for abrasive blasting. This material safety data sheet and the information contained herein were not developed for abrasive blasting.

Note: This MSDS covers many aggregate types. Individual composition of hazardous constituents will vary between types of aggregate.

Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

Component	Percent (By Weight)	CAS Number	OSHA PEL -TWA (mg/m^3)	ACGIH TLV-TWA (mg/m^3)	LD_{50}	LC_{50}
Crystalline Silica (as Quartz)	varies	14808-60-7	[(10) / (%SiO_2+2)] (R); [(30) / (%SiO_2+2)] (T)	0.025 (R)	NA	NA
Mica *	varies	12001-26-2	3 (R)	3 (R)	NA	NA
Calcium Carbonate*	varies	1317-65-3	15 (T), 5 (R)	10 (T)	NA	NA
Calcium Sulfate*	varies	13397-24-5	15 (T), 5 (R)	10 (T)	NA	NA
Particulate Not Otherwise Regulated	varies	NA	5 (R) 15 (T)	3 (R) 10 (T)	NA	NA

Note: Exposure limits for components noted with an * contain no asbestos and <1% crystalline silica

See Section 9 for information on the individual composition of different types of aggregate.

Section 3: HAZARD IDENTIFICATION

WARNING

Toxic - Harmful by inhalation. (Contains crystalline silica)
DO NOT use for Abrasive Blasting.

Use proper engineering controls, work practices, and Personal Protective Equipment (PPE) to prevent exposure to dust.

Read MSDS for details.

Respiratory Protection

Eye Protection

Section 3: HAZARD IDENTIFICATION (continued)

Emergency Overview: Aggregates come in a variety of colors and they are a sold material that is odorless. They are not combustible or explosive. A single, short-term exposure to aggregate presents little or no hazard.

Potential Health Effects:

Eye Contact: Eye contact to airborne dust may cause immediate or delayed irritation or inflammation. Eye exposures require immediate first aid and medical attention to prevent significant damage to the eye.

Skin Contact: Aggregates may cause dry skin, abrasions, discomfort, and irritation.

Inhalation (acute): Breathing dust may cause nose, throat or lung irritation, including choking, depending on the degree of exposure.

Inhalation (chronic): Risk of injury depends on duration and level of exposure.

Silicosis: This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a seriously disabling and fatal lung disease. See Note to Physicians in Section 4 for further information.

This product contains mica. Prolonged and repeated inhalation of respirable mica dust may cause lung disease (pneumoconiosis). The extent and severity of lung injury depends on duration and level of exposure.

Carcinogenicity: Crystalline silica is classified by IARC and NTP as a known human carcinogen.

Autoimmune Disease: Some studies show that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders such as scleroderma (thickening of the skin), systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys.

Tuberculosis: Silicosis increases the risk of tuberculosis.

Renal Disease: Some studies show an increased incidence of chronic kidney disease and end-stage renal disease in workers exposed to respirable crystalline silica.

Ingestion: Do not ingest aggregates. Ingestion of small quantities of aggregates is not known to be harmful; ingesting large quantities can cause intestinal distress.

Medical Conditions Aggravated by Exposure: Individuals with lung disease (e.g. bronchitis, emphysema, COPD, pulmonary disease) can be aggravated by exposure.

Section 4: FIRST AID MEASURES

Eye Contact: Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions.

Skin Contact: Wash with cool water and a pH neutral soap or a mild skin detergent. Seek medical attention for rash or irritation.

Inhalation: Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms do not subside.

Ingestion: Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention or contact poison control center immediately.

Section 4: FIRST AID MEASURES (continued)

Note to Physician: The three types of silicosis include:

- Simple chronic silicosis – which results from long-term exposure (more than 20 years) to low amounts of respirable crystalline silica. Nodules of chronic inflammation and scarring provoked by the respirable crystalline silica form in the lungs and chest lymph nodes. This disease may feature breathlessness and may resemble chronic obstructive pulmonary disease (COPD).
- Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years). Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis.
- Acute silicosis – results from short-term exposure to very large amounts of respirable crystalline silica. The lungs become very inflamed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels.

Progressive massive fibrosis may occur in simple or accelerated silicosis, but is more common in the accelerated form. Progressive massive fibrosis results from severe scarring and leads to the destruction of normal lung structures.

Section 5: FIREFIGHTING MEASURES

Flashpoint & Method: Non-combustible

General Hazard: Avoid breathing dust.

Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Firefighting Equipment: Aggregates pose no fire-related hazard. A SCBA is recommended to limit exposures to combustion products when fighting any fire.

Combustion Products: None.

Section 6: ACCIDENTAL RELEASE MEASURES

General: Place spilled material into a container. Avoid actions that cause dust to become airborne. Avoid inhalation of dust. Wear appropriate protective equipment as described in Section 8. Do not wash aggregates down sewage and drainage systems or into bodies of water (e.g. streams).

Waste Disposal Method: Dispose of aggregates according to Federal, State, Provincial and Local regulations.

Section 7: HANDLING AND STORAGE

General: Stack bagged material in a secure manner to prevent falling. Bagged aggregate is heavy and poses risks such as sprains and strains to the back, arms, shoulders and legs during lifting and mixing. Handle with care and use appropriate control measures.

Engulfment hazard. To prevent burial or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains aggregates. Dust can buildup or adhere to the walls of a confined space. The dust can release, collapse or fall unexpectedly.

Do not stand on stockpiles of aggregates, they may be unstable. Use engineering controls (e.g. wetting stockpiles) to prevent windblown dust from stockpiles, which may cause the hazards described in Section 3.

Section 7: HANDLING AND STORAGE (continued)

Usage: This product is NOT to be used for abrasive blasting.

Cutting, crushing or grinding aggregates, hardened cement, concrete or other crystalline silica-bearing materials will release respirable crystalline silica. Use all appropriate measures of dust control or suppression, and Personal Protective Equipment (PPE) described in Section 8 below.

Housekeeping: Avoid actions that cause dust to become airborne during clean-up such as dry sweeping or using compressed air. Use HEPA vacuum or thoroughly wet with water to clean-up dust. Use PPE described in Section 8 below.

Storage Temperature: Unlimited. **Storage Pressure:** Unlimited.

Clothing: Remove and launder clothing that is dusty before it is reused.

Warning: Crystalline silica exists in several forms, the most common of which is quartz. If crystalline silica (quartz) is heated to more than 870º C it can change to a form of crystalline silica known as tridymite, and if crystalline silica (quartz) is heated to more than 1470º C it can change to a form of crystalline silica known as cristobalite. Crystalline silica as tridymite and cristobalite are more fibrogenic than crystalline silica as quartz. The OSHA PEL for crystalline silica as tridymite and cristobalite is one-half the PEL for crystalline silica (quartz); the ACGIH TLV crystalline silica as tridymite and cristobalite is 0.05 mg/m^3 (R).

Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls: Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits.

Personal Protective Equipment (PPE):

Respiratory Protection: Under ordinary conditions no respiratory protection is required. Wear a NIOSH approved respirator that is properly fitted and is in good condition when exposed to dust above exposure limits.

Eye Protection: Wear ANSI approved glasses or safety goggles when handling dust to prevent contact with eyes. Wearing contact lenses when using aggregates, under dusty conditions, is not recommended.

Skin Protection: Wear gloves in situations where abrasions from aggregates may occur. Remove clothing and protective equipment that becomes dusty and launder before reusing.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid	**Evaporation Rate:**	NA.
Appearance:	Variety of colors	**pH (in water):**	Neutral
Odor:	None.	**Boiling Point:**	>1000^{o} C
Vapor Pressure:	NA.	**Freezing Point:**	None, solid.
Vapor Density:	NA.	**Viscosity:**	None, solid.
Specific Gravity:	2.7	**Solubility in Water:**	Insoluble

Section 9: PHYSICAL AND CHEMICAL PROPERTIES (continued)

The following tables describe the mineral composition of some of the different types of aggregates.

Rock Type	Rock	Mineral	Mineral Formula	Mineral Composition
Igneous Rocks	Quartz	Quartz	SiO_2	Silicon Dioxide
		Chalcedony	SiO_2	Silicon Dioxide
		Agate	SiO_2	Silicon Dioxide
	Granite	Potassium Feldspar (Orthoclase)	$KAlSi_3O_8$	Potassium Aluminum Silicate
		Plagioclase Feldspar	(Na, Ca) $Al_{1-2}Si_{3-2}O_8$	Sodium Calcium Aluminum Silicate
		Quartz	SiO_2	Silicon Dioxide
		Mica (Biotite)	$K\ (Fe, Mg)_3\ AlSi_3O_{10}\ (F, OH)_2$	Potassium Iron Magnesium Aluminum Silicate Hydroxide Fluoride
		Amphibole (Hornblend)	$Ca_2(Mg, Fe, Al)_5(Al, Si)_8O_{22}\ (OH)_2$	Calcium Magnesium Iron Aluminum Silicate Hydroxide
	Basalt and Gabbro	Plagioclase Feldspar	(Na, Ca) $Al_{1-2}Si_{3-2}O_8$	Sodium Calcium Aluminum Silicate
		Pyroxene (Augite)	$(Ca, Na)(Mg, Fe, Al)(Al, Si)_2O_6$	Calcium sodium Magnesium Iron aluminum Silicate
		Olivine	$(Mg,Fe)_2SiO_4$	Magnesium Iron Silicate
Sedimentary Rocks	Sandstone	Quartz	SiO_2	Silicon Dioxide
		Calcite	$CaCO_3$	Calcium Carbonate
		Hematite	Fe_2O_3	Iron Oxide
		Magnetite	Fe_3O_4	Iron Oxide
		Potassium Feldspar	$KAlSi_3O_8$	Potassium Aluminum Silicate
		Mica	$K\ (Fe, Mg)_3\ AlSi_3O_{10}\ (F, OH)_2$	Potassium Iron Magnesium Aluminum Silicate Hydroxide Fluoride
	Limestone	Calcite and Aragonite	$CaCO_3$	Calcium Carbonate
		Clay Minerals	(Mg, Al) Si_3O_{12}	Magnesium Aluminum Silicate
		Chert or Diatomite	SiO_2	Silicon Dioxide
	Dolostone	Dolomite	$CaMg(CO_3)_2$	Magnesium Calcium Carbonate
		Clay Minerals	(Mg, Al) Si_3O_{12}	Magnesium Aluminum Silicate
		Chert or Diatomite	SiO_2	Silicon Dioxide
Crystalline silica content: Igneous types 20-100%; Sedimentary types 1-20%; Quartz 100%.				

Section 10: STABILITY AND REACTIVITY

Stability: Stable. Avoid contact with incompatible materials.

Incompatibility: Aggregate dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas. Silicates react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.

Hazardous Polymerization: None. **Hazardous Decomposition:** None.

Section 11 and 12: TOXICOLOGICAL AND ECOLOGICAL INFORMATION

For questions regarding toxicological and ecological information refer to contact information in Section 1.

Section 13: DISPOSAL CONSIDERATIONS

Dispose of waste and containers in compliance with applicable Federal, State, Provincial and Local regulations.

Section 14: TRANSPORT INFORMATION

This product is not classified as a Hazardous Material under U.S. DOT or Canadian TDG regulations.

Section 15: REGULATORY INFORMATION

OSHA/MSHA Hazard Communication:	This product is considered by OSHA/MSHA to be a hazardous chemical and should be included in the employer's hazard communication program.
CERCLA/SUPERFUND:	This product is not listed as a CERCLA hazardous substance.
EPCRA SARA Title III:	This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 and is considered a hazardous chemical and a delayed health hazard.
EPRCA SARA Section 313:	This product contains none of the substances 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.
RCRA:	If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.
TSCA:	Crystalline silica is exempt from reporting under the inventory update rule.
California Proposition 65:	Crystalline silica (airborne particulates of respirable size) is known by the State of California to cause cancer.
WHMIS/DSL: 	Aggregate products may be subject to WHMIS depending on the intended use and worker exposure. Aggregate products containing crystalline silica and calcium carbonate are classified as D2A, and are subject to WHMIS requirements.

Section 16: OTHER INFORMATION

Abbreviations:

>	Greater than	NA	Not Applicable
ACGIH	American Conference of Governmental Industrial Hygienists	NFPA	National Fire Protection Association
CAS No	Chemical Abstract Service number	NIOSH	National Institute for Occupational Safety and Health
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	NTP	National Toxicology Program
		OSHA	Occupational Safety and Health Administration
CFR	Code for Federal Regulations	PEL	Permissible Exposure Limit
CL	Ceiling Limit	pH	Negative log of hydrogen ion
DOT	U.S. Department of Transportation	PPE	Personal Protective Equipment
EST	Eastern Standard Time	R	Respirable Particulate
HEPA	High-Efficiency Particulate Air	RCRA	Resource Conservation and Recovery Act
HMIS	Hazardous Materials Identification System	SARA	Superfund Amendments and Reauthorization Act
IARC	International Agency for Research on Cancer	T	Total Particulate
		TDG	Transportation of Dangerous Goods
LC_{50}	Lethal Concentration	TLV	Threshold Limit Value
LD_{50}	Lethal Dose	TWA	Time Weighted Average (8 hour)
mg/m^3	Milligrams per cubic meter	WHMIS	Workplace Hazardous Materials Information System
MSHA	Mine Safety and Health Administration		

This MSDS (Sections 1-16) was revised on March 1, 2014.

An electronic version of this MSDS is available at: www.lafarge-na.com under the Sustainability and Products sections. Please direct any inquiries regarding the content of this MSDS to SDSinfo@Lafarge.com.

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