

AMBERLITE	MATERIAL SAFETY DATA SHEET
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1. Contact Information

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2. Product Identification

Trade Name	AMBERLITE	Common Name(s)	Quartz, Crystalline Silica, Silicon Dioxide
Chemical Formula	SiO ₂ (Silicon Dioxide)		
CAS Number	14808-60-07		
EINECS Number	238-878-4		
Physical Form	smooth, irregular/angular particles, amber tones		
Particle Size	Size A: approx. 1/4" x 1/8" Size B: approx. 1/2" x 1/4" Size C: approx. 7/8" x 1/2"		

3. Ingredients & Hazards

Ingredient	Wt. % (Approx.)	CAS No.	EU Classification (67/548/EEC)
Crystalline Silica, Quartz	87 - 99.9%	14808-60-7	Xn R48/20

4. Hazards Identification & Cautions

This product is a chemically inert, non-combustible material.

EMERGENCY OVERVIEW

WARNING: LUNG INJURY AND CANCER HAZARD. Do not breathe dust. May cause delayed lung injury. Long term exposure can cause silicosis. Silicosis is a respiratory disease, which can result in delayed, disabling and sometimes fatal lung injury. 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. A single exposure will not result in serious adverse effects. **See "Health Hazards" in Section 11 for detailed information.** See exposure limit presentation in Section 8 for further information. Avoid creating dust when handling, using or storing. Use only with adequate ventilation to keep exposure below recommended exposure limits.

EU Classification of Substance/Preparation: Harmful (Xn) R48/20

5. First Aid Measures

Gross Inhalation	Remove victim to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult, have qualified personnel administer oxygen. Get prompt medical attention.
Skin Contact	No first aid should be needed since dermal contact with this product does not affect the skin. Wash exposed skin with soap and water before breaks and at the end of the shift.
Eye Contact	Flush the eyes immediately with large amounts of running water, lifting the upper and lower lids occasionally. If irritation persists or for imbedded foreign body, get immediate medical attention.
Ingestion	If large amounts are swallowed, get immediate medical attention.

6. Fire Fighting Measures

Extinguishing Media	This product will not burn but is compatible with all extinguishing media. Use any media that is appropriate for the surrounding fire.
Special Fire Fighting Procedures	None required with respect to this product. Firefighters should always wear self-contained breathing apparatus for fires indoors or in confined areas.
Unusual Fire & Explosion Hazards	none
Hazardous Combustion Products	none

7. Accidental Release Measures

Wear appropriate protective equipment. If uncontaminated, collect using dustless method (HEPA vacuum or wet method) and place in appropriate container for use. If contaminated: a) use appropriate method for the nature of contamination, and b) consider possible toxic or fire hazards associated with the contaminating substances. Collect for appropriate disposal.

8. Handling & Storage

Do not breathe dust. Do not rely on your sight to determine if dust is in the air. Silica may be in the air without a visible dust cloud. Use normal precautions against bag breakage or spills of bulk material. Avoid creation of respirable dust. Do not use as a dry abrasive blasting agent. ANSI/AIHA Z9.4:1997 recommends that silica sand be prohibited as an abrasive blasting agent for use in fixed location abrasive-blast enclosures. Use good housekeeping in storage and use areas to prevent accumulation of dust in work area.

To reduce the risk of developing silicosis, lung cancer and other adverse health effects, the ACGIH recommends that the industrial hygienist use every means available to keep exposures below the recommended TLV. NIOSH recommends reducing airborne levels as low as possible below NIOSH's recommended exposure limit, substituting less hazardous materials when feasible, using appropriate respiratory protection when source controls cannot keep exposures below the recommended limit and medical examinations available to exposed workers.

Use adequate ventilation and dust collection. To minimize exposure, wear a respirator approved for silica dust when using, handling, storing or disposing of this product or bag. Refer to the most recent standards of ANSI (Z88.2), OSHA (29 CFR 1910.134), MSHA (30 CFR Parts 56 and 57) and NIOSH Respirator Decision Logic. Maintain, clean and fit test respirators in accordance with OSHA regulations. Maintain and test ventilation and dust collection equipment. Launder clothing that has become dusty. Empty containers (bags, bulk containers, storage tanks, etc.) retain silica residue and must be handled in accordance with the provisions of this Material Safety Data Sheet. WARN and TRAIN employees in accordance with state and federal regulations.

WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS AND USERS IN CASE OF RESALE) BY POSTING, AND OTHER MEANS, OF THE HAZARDS AND OSHA AND ANY OTHER APPLICABLE REGULATORY PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.

See also American Society for Testing and Materials (ASTM) Standard Practice E1132-99a, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica".

Additional information on silica hazards and precautionary measures can be found at the following websites:

NIOSH Joint Campaign on Silicosis Prevention	http://www.cdc.gov/niosh/topics/silica/#campaign
OSHA Crystalline Silica Website	http://www.osha.gov/SLTC/silicacrystalline/index.html
MSHA Silicosis Prevention Website	http://www.msha.gov/S&HINFO/SILICO/SILICO.HTM
NIOSH Hazard Review	<i>Health Effects of Occupational Exposure to Respirable Crystalline Silica</i> http://www.cdc.gov/niosh/docs/2002-129/02-129a.html

9. Exposure Control / Personal Protection

LEGEND

PEL - Permissible Exposure Limit	OSHA - Occupational Safety & Health Administration
TLV - Threshold Limit Value	MSHA - Mine Safety & Health Administration
REL - Recommended Exposure Limit	NIOSH - National Institute for Occupational Safety & Health
TWA - time-weighted average	

COMPONENT	OSHA/MSHA PEL	TLV
Crystalline Silica Quartz Respirable measured as an 8-hour TWA	10 mg/m ³ + (% silica + 2)	0.025 mg/m ³ (respirable fraction)

In 2006 the ACGIH lowered the TLV for Silica, Crystalline: a-Quartz and Cristobalite to 0.025 mg/m³ stating in the Documentation of the TLV "Because the time between exposure and signs of fibrosis is characteristically very long, as much as 30 to 40 years, the margin of safety for exposure to crystalline silica at the proposed TLV-TWA is not known precisely. Given the observed association between silicosis and lung cancer, it is recommended that air concentrations be maintained as far below the proposed TLV as prudent practices permit. The recommended TLV-TWA of 0.025 mg/m³, respirable particulate mass, is intended to prevent pulmonary fibrosis that may be a risk factor for lung cancer. An A2, Suspected Human Carcinogen, notation is based on the demonstrated association between lung cancer and the presence of silicosis." The documentation further states: "A lack of toxicological and industrial hygiene data does not permit the recommendation of a TLV-STEL. However, it should be noted that high exposures of short duration to freshly fragmented crystalline particles do produce an acute and rapidly progressive form of silicosis. The reader is encouraged to review the section on Excursion Limits in the "Introduction to the Chemical Substances" of the current TLVs® and BEIs® book for guidance and control of excursions above the TLV-TWA, even when the 8-hour TWA is within the recommended limits"

NIOSH has issued its REL of 50 micrograms respirable free silica per cubic meter of air (0.05 mg/m³) as determined by a full shift sample up to 10-hour working day, 40 hours per week. NIOSH has recommended that OSHA and MSHA adopt the NIOSH REL as the OSHA PEL and the MSHA Exposure Limit. The 1974 NIOSH Criteria for a Recommended Standard for Occupational Exposure to Crystalline Silica should be consulted for more detailed information. Additionally, NIOSH, In a publication entitled NIOSH Hazard Review Health Effects of Occupational Exposure to Respirable Silica (April 2002), NIOSH stated" ... that workers have a significant risk of developing chronic silicosis when they are exposed to respirable crystalline silica over a working lifetime at the current Occupational Safety and Health

Administration (OSHA) permissible exposure limit (PEL), the Mine Safety and Health Administration (MSHA) PEL, or the National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL). ... Current sampling and analytical methods used to evaluate occupational exposure to respirable crystalline silica do not meet the accuracy criterion needed to quantify exposures at concentrations below the NIOSH REL of 0.05 mg/m³ as a time-weighted average (TWA) for up to a 10-hr workday during a 40-hr workweek. Until improved sampling and analytical methods are developed for respirable crystalline silica, NIOSH will continue to recommend an exposure limit of 0.05 mg/m³ to reduce the risk of developing silicosis, lung cancer, and other adverse health effects. NIOSH also recommends minimizing the risk of illness that remains for workers exposed at the REL by substituting less hazardous materials for crystalline silica when feasible, by using appropriate respiratory protection when source controls cannot keep exposures below the NIOSH REL, and by making medical examinations available to exposed workers."

Crystalline silica exists in several forms, the most common of which are quartz (i.e. this product), trydimite and cristobalite, with quartz being the most common form found in nature. If quartz is heated to more than 870°C, it can change form to trydimite and if quartz is heated to more than 1450°C, it can change form to cristobalite. The OSHA PELs and MSHA Exposure Limits for trydimite and cristobalite are one-half of the PEL for quartz.

Ventilation Use local exhaust as required to maintain exposures as far as possible below applicable occupational exposure limits. See also ACGIH "Industrial Ventilation - A Manual for Recommended Practice" (current edition). Control of exposure to dust must be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general or local exhaust ventilation and substitution of less toxic materials).

Respiratory Protection When effective engineering controls are not feasible, or while they are being implemented, appropriate respiratory protection must be used. Use appropriate respiratory protection for respirable particulates based on consideration of airborne workplace concentrations and duration of exposure arising from intended end use. Refer to the most recent standards of ANSI (Z88.2), OSHA (29 CFR 1910.134), MSHA (30 CFR Parts 56 and 57) and NIOSH Respirator Decision Logic.

Gloves Protective gloves recommended.

Eye Protection Safety glasses or goggles recommended.

Other Protective Equipment/Clothing As appropriate for the work environment. Dusty clothing should be laundered before reuse.

10. Physical & Chemical Properties

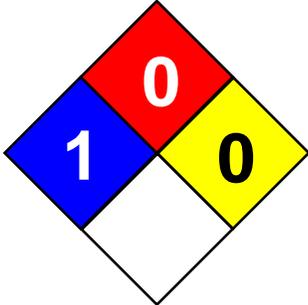
Appearance & Odor	odorless, smooth, irregular/angular particles, color varies: white, tan, yellow, gray, pink (some)	Specific Gravity (water=1)	2.65
pH	not applicable	Vapor Pressure	not applicable
Boiling Point	4,046°F / 2,230°C	Vapor Density	not applicable
Melting Point	2,930°F / 1,610°C	Evaporation Rate	not applicable
Solubility in Water	negligible	Flash Point (Method Used)	fully oxidized, will not burn
Percent Volatile	0%	Flammable Limits (LEL)	not applicable
Autoignition Temp	will not burn	UEL	not applicable

11. Stability & Reactivity

Stability	stable
Conditions to Avoid	none
Incompatibility	Powerful oxidizing agents as fluorine, chlorine trifluoride, manganese trioxide, etc.
Hazardous Decomposition Products	Silica will dissolve in hydrofluoric acid producing a corrosive gas, silicon tetrafluoride.
Hazardous Polymerization	will not occur
Conditions to Avoid	None

12. Toxicological Information	
Health Hazards	
Inhalation	<p>Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may have the following serious chronic health effects.</p> <p>Silicosis Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling and sometimes fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop mycobacterial infections (tuberculous and non-tuberculous) and fungal infections. Inhalation of air with a very high concentration of respirable silica dust can cause the most serious forms of silicosis in a matter of months or a few years. Some epidemiologic studies have concluded that there is significant risk of developing silicosis even at airborne exposure levels that are equal to the recommended NIOSH REL, the ACGIH TLV, the OSHA PEL, and the MSHA Exposure Limit.</p> <p>Cancer Status The International Agency for Research on Cancer has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1 carcinogenic to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (published in June 1997) in conjunction with the use of these materials. The National Toxicology Program classifies respirable crystalline silica as "known to be a human carcinogen". Refer to the Eleventh Report on Carcinogens (2005). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).</p> <p>Other Data with Possible Relevance to Human Health</p> <p>There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by fibrosis of the lungs, skin and other internal organs) rheumatoid arthritis, systemic lupus, erythematosus, sarcoidosis, chronic bronchitis, chronic obstructive pulmonary disease (COPD), emphysema, chronic kidney disease and end-stage renal disease.</p> <p>For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768, 1997, and see also NIOSH Hazard Review - Health Effects of Occupational Exposure to Respirable Crystalline Silica, April 2002 (see Section 7 for NIOSH Hazard Review Website).</p>
Skin Contact	No adverse effects expected.
Eye Contact	Contact may cause mechanical irritation and possible injury.
Ingestion	No adverse effects expected for normal, incidental ingestion.
Chronic Health Effects	See "inhalation" subsection above with respect to silicosis, cancer status and other data with possible relevance to human health.
Medical Conditions Aggravated by Exposure	Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to respirable quartz dust.
Signs & Symptoms of Exposure	Exposure to dust may cause mucous membrane and respiratory irritation, cough, sore throat, nasal congestion, sneezing and shortness of breath. However, there may be no immediate signs or symptoms of exposure to hazardous concentrations of respirable crystalline silica (quartz). See "Inhalation" subsection above for symptoms of silicosis. The absence of symptoms is not necessarily indicative of safe conditions.
Acute Toxicity Values	Silica: LD50 oral rate > 22,500 mg/kg.
13. Ecological Information	
Silica	LC50 carp > 10,000 mg /L/72 hr. This product is not expected to present an environmental hazard.
14. Disposal Consideration	
Waste Disposal Method	Silica is not classified as a hazardous waste under US EPA RCRA regulations. If uncontaminated, dispose of as an inert, non-metallic mineral. If contaminated, dispose in accordance with all applicable local, state/provincial and federal regulations in light of the contamination present. Local regulations may be more stringent than regional and national requirements. It is the responsibility of the waste generator to determine toxicity and physical characteristics of the material to determine the proper waste identification and disposal in compliance with applicable regulations.

15. Transport Information			
U.S. Department of Transportation Hazard Classification			
Proper Shipping Name	not regulated	Labels Required	not applicable
Technical Name	not applicable	DOT Packaging Requirements	not applicable
UN Number	not applicable	Exceptions	not applicable
Hazard Class/Packing Group	not applicable		
16. Regulatory Information			
SARA 311/312			
Hazard Categories for SARA Section 311/312 Reporting: Chronic Health			
SARA 313			
This Product Contains the Following Chemicals Subject to Annual Release Reporting Requirements Under the SARA Section 313 (40 CFR 372): None			
CERCLA Section 103 Reportable Quantity			
none			
California Proposition 65			
This product contains crystalline silica (respirable) which is known to the State of California to cause cancer.			
Toxic Substances Control Act			
All of the components of this product are listed on the EPA TSCA Inventory or exempt from pre-manufacture notification requirements.			
European Inventory of Commercial Chemical Substances			
All of the components of this product are listed on the EINECS Inventory or exempt from notification requirements. (The EINECS number for Quartz: 238-878-4)			
European Community Labeling			
Xn	Harmful - Contains crystalline silica, quartz (238-878-4)		
R48/20 Harmful	Danger of serious damage to health by prolonged exposure by inhalation		
S22	Do not breathe dust		
S38	In case of insufficient ventilation, wear suitable respiratory equipment.		
Canadian Environmental Protection Act			
All the components of this product are listed on the Canadian Domestic Substances List or exempt from notification requirements.			
Canadian WHMIS Classification			
Class D, Division 2, Subdivision A (Very Toxic Material causing other Toxic Effects) This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.			
Japan METI			
All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law.			
Australian Inventory of Chemical Substances			
All of the components of this product are listed on the AICS inventory or exempt from notification requirements.			
Australian National Occupational Health & Safety Commission Status			
Hazardous according to the criteria of Australian National Occupational Health & Safety Commission -Harmful (Xn) R48/20 Harmful: Danger of serious damage to health by prolonged exposure by inhalation.			
Korea			
All of the components of this product are listed on the ECL inventory or exempt from notification requirements.			
Philippines			
All of the components of this product are listed on the PICCS inventory or exempt from notification.			

17. Other Information											
EU Classes and Risk Phrases for Reference (see Sections 3 and 4)											
Xn	Harmful	R48/20	Harmful: Danger of serious damage to health by prolonged exposure by inhalation.								
S22	Do not breathe dust	S38	In case of insufficient ventilation, wear suitable respiratory equipment.								
NFPA 704 Hazard Rating		HMIS Hazard Rating									
		<table border="1"> <tr> <td>HEALTH</td> <td>*</td> </tr> <tr> <td>FLAMMABILITY</td> <td>0</td> </tr> <tr> <td>REACTIVITY</td> <td>0</td> </tr> <tr> <td>PERSONAL PROTECTION</td> <td>E</td> </tr> </table> <p>* WARNING - Chronic health effect possible Inhalation of silica dust may cause lung injury/disease (silicosis). Take appropriate measures to avoid breathing dust. See Section 3.</p>		HEALTH	*	FLAMMABILITY	0	REACTIVITY	0	PERSONAL PROTECTION	E
HEALTH	*										
FLAMMABILITY	0										
REACTIVITY	0										
PERSONAL PROTECTION	E										
References											
<p>Registry for Toxic Effects of Chemical Substances (RTECS), 2006</p> <p>Patty's Industrial Hygiene and Toxicology</p> <p>NIOSH Hazard Review - Health Effects of Occupational Exposure to Respirable Crystalline Silica, April 2002</p> <p>NTP Eleventh Report on Carcinogens, 2005</p> <p>IARC Monograph Volume 68, Silica, Some Silicates and Organic Fibres, 1997</p> <p>Hazardous Substances Data Bank (HSDB), 2006</p> <p>Documentation of the TLV - Silica, Crystalline: a-Quartz and Cristobalite, American Conference of Governmental Industrial Hygienists, 2006</p>											
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			Last Revised April 22, 2011								

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