SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name: Aplite
Chemical Name: Sodium/Calcium/Potassium aluminosilicate (feldspar); crystalline silica (quartz)
Formula: $Na/Ca/KAlSi_3O_8$; SiO_2
Supplier: U. S. Silica Company
Address: P.O. Box 187
Berkeley Springs, WV 25411
Phone: (304)258-2500
Emergency Phone: (304)258-2500
Fax: (304)258-8295

SECTION 2 - INGREDIENTS: COMPOSITION/INFORMATION

INGREDIENT	% WEIGHT	PEL-OSHA *	TLV-ACGIH *	LD 50/LC 50 ROUTE/SPECIES
Feldspar CAS No.: 68476-25-5 RTECS No.: No Data	90-97	None Established	None Established	No Data
Quartz CAS No.: 14808-60-7 RTECS No.: SO5600000	3-10	10 mg/m^3 (% SiO_2 +2) (resp.) 30 mg/m^3 (%SiO_2 +2) (total)	0.1 mg/m^3 (resp.)	No Data

* When applicable, refer to state or provincial regulations which may be more stringent.

Other Limits Recommended: The National Institute for Occupational Safety and Health (NIOSH) has established a recommended REL of 0.05 mg/m^3 for respirable crystalline silica as determined by a full-shift sample for a 10-hour working day, 40-hour work week.

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Non-flammable white or tan granular material. Inhalation of high concentrations may cause upper respiratory irritation. This product contains crystalline silica in the form of quartz. Long-term inhalation of respirable crystalline silica can cause disabling lung disease (silicosis) and increase the risks of developing lung cancer. Avoid creating dust. Do not inhale dust from this product. Do not use compressed air or dry sweeping to remove dust from the work area. Use an appropriately equipped vacuum or wet clean-up methods to remove dust.

POTENTIAL HEALTH EFFECTS (for the Crystalline Silica (quartz) component)

Inhalation:

a. Silicosis — Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs. Silicosis may be progressive; it may lead to disability and death.

b. Cancer — Crystalline silica (quartz) inhaled from occupational sources is classified as carcinogenic to humans.

c. Scleroderma — There is evidence that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of scleroderma, an autoimmune disorder manifested by a fibrosis (scarring) of the skin and internal organs.

d. Tuberculosis — Silicosis increases the risk of tuberculosis.

e. Nephrotoxicity — There are several studies suggesting that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of kidney disorders.

Eye Contact: Crystalline silica (quartz) may cause abrasion of the cornea.

Skin Contact: Not applicable.

Ingestion: Not applicable.

Chronic Effects: The adverse health effects -- silicosis, cancer, scleroderma, tuberculosis, and nephrotoxicity -- are chronic effects.

Signs and Symptoms of Exposure: There are no symptoms of exposure; exposure to crystalline silica occurs without symptoms. The symptoms of the potential health effects of crystalline silica are described in Section 4 of the MSDS.

Medical Conditions Generally Aggravated by Exposure: The condition of individuals with lung disease (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure.

SECTION 4 - FIRST-AID MEASURES

Inhalation: No specific first-aid is necessary since the adverse health effects associated with exposure to crystalline silica (quartz) result from chronic exposures. If there is a gross inhalation of crystalline silica (quartz), remove the person immediately to fresh air, give artificial respiration as needed, seek medical attention as needed.

Eye Contact: Flush eyes with lukewarm water for 15 minutes opening and closing eyelids to ensure adequate rinsing. If redness, irritation, pain, or light sensitivity occurs, seek medical attention.

Skin Contact: Wash skin with soap and water. If irritation persists, seek medical attention.

Ingestion: Not applicable.

SECTION 5 - FIRE FIGHTING MEASURES

Flammable Properties

Flash Point:	Non-flammable	
Flammable Limits:	**LEL**: None	**UEL**: None
NFPA Classification:		
Health: 0	**Flammability**: 0	**Reactivity**: 0

Extinguishing Media: N/A.

Fire and Explosion Hazards: Non-flammable, non-combustible. Product will not burn.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Do not walk through or scatter spilled material. For small spills, clean with a vacuum with a filtration system sufficient to remove and prevent recirculation of crystalline silica (a vacuum equipped with a high-efficiency particulate air (HEPA) filter is recommended). For large spills, use a fine spray or mist to control dust creation and carefully scoop or shovel into clean dry container for later reuse or disposal. DO NOT USE DRY SWEEPING OR COMPRESSED AIR TO CLEAN SPILLS. Appropriate respiratory protection is essential for all clean-up personnel. All dusts must be thoroughly removed.

SECTION 7 - HANDLING AND STORAGE

Dustless systems for handling and storage should be provided. Store in dry area in closed containers. Storage and work areas should be periodically cleaned to minimize dust accumulation. Avoid dust inhalation and promulgation. DO NOT use compressed air or dry sweeping to remove dust from work area. Dust should be removed using an appropriately equipped vacuum. If an appropriate vacuum is unavailable, only wet-clean-up methods should be used (i.e. misting). Moisture should be added as necessary to reduce exposure to airborne respirable crystalline.

Under dusty conditions, employees should wear coveralls or other suitable work clothing. Contaminated clothing should be vacuumed before removal. DO NOT REMOVE dust from clothing by blowing or shaking.

Practice good housekeeping. Wash thoroughly after handling. Change contaminated clothing. Do not reuse until laundered. Do not take silica contaminated clothing home. Comply with OSHA Hazard Communication Rule 29 CFR 1910.1200, and applicable federal, state, and local worker or community “right to know” laws and regulations during storage, use and disposal of this product. Consult the American Society for testing and Materials (ASTM) standard practice E 1132-89(93), “Standard Practice for Health Requirements Relating to Occupational Exposure to Quartz Dust.”

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY: Under normal working conditions, below acceptable exposure guidelines, none is required. Appropriate respirator selection is dependent upon the magnitude of exposure.

PARTICULATE CONCENTRATION	MINIMUM RESPIRATORY PROTECTION
10 X PEL or less	--Any dust respirator (except single use or quarter mask) which is equipped with a HEPA filter --Any supplied air respirator operated in pressure demand or other positive pressure mode
50 X PEL or less	--A high efficiency particulate filter respirator with a full facepiece --Any supplied-air respirator with full facepiece, helmet, or hood operated in demand-flow mode --Any self-contained breathing apparatus with a full facepiece operated in demand-flow mode
1000 X PEL or less	--A full-facepiece powered air-purifying respirator with a HEPA filter --A full-facepiece supplied-air respirator operated in pressure-demand or other positive pressure mode
Greater than 1000 X PEL or high or unknown concentrations	--A self-contained breathing apparatus with full facepiece operated in pressure demand or other positive pressure mode
*** Only NIOSH- approved or MSHA-approved respiratory equipment should be used. (See 29 CFR §1910.134)**	

Skin: Protective gloves are recommended when prolonged contact is expected.

Eyes: Safety-glasses with side shields or goggles to prevent dust and particles from entering the eye.

Engineering Controls: Local exhaust ventilation and collection systems must be designed, used, and maintained to reduce the level of crystalline silica dust into the workplace. Consult ACGIH "Industrial Ventilation, A Manual of Recommended Practice," the latest edition.

Medical Surveillance: Medical surveillance program in accordance with "Criteria for a Recommended Standard. . . Occupational Exposure to Crystalline Silica," NIOSH, pp.: 2-4, 1974 are recommended.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

	Feldspar	Crystalline Silica
APPEARANCE:	Tan granular material	White or tan granular material
ODOR:	None	None
SOLUBILITY IN WATER:	Insoluble	Insoluble
SPECIFIC GRAVITY (H_2O = 1):	2.63	2.65
MELTING POINT:	1260 °C	1545 °C
% VOLATILE:	0	0

SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable

Reactivity/Incompatibility: Contact with powerful oxidizing agents (i.e.: fluorine, chlorine trifluoride, and oxygen difluoride) may cause fires. Silica dissolves in hydrofluoric acid to produce the corrosive gas silicon tetrafluoride.

Decomposition Products: Thermal decomposition may produce silicon and aluminum oxides. At high temperatures, quartz will form cristobalite.

Hazardous Polymerization: Will not occur.

Skin: None required.

Eyes: Safety-glasses with side shields or goggles to prevent dust and particles from entering the eye.

Engineering Controls: Local exhaust ventilation and collection systems must be designed and maintained to prevent the accumulation and recirculation of free silica dust into the workplace. Consult ACGIH "Industrial Ventilation, A Manual of Recommended Practice," the latest edition.

SECTION 11 - TOXICOLOGICAL INFORMATION

CRYSTALLINE SILICA (QUARTZ)

A. SILICOSIS

The major concern is silicosis, caused by the inhalation and retention of respirable crystalline silica dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute.

Chronic or Ordinary Silicosis is the most common form of silicosis, and can occur after many years of exposure to relatively low levels of airborne respirable crystalline silica dust. 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 secondary to the lung disease (cor pumonale).

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 fatal.

B. CANCER

IARC - The International Agency for Research on Cancer ("IARC") concluded that there was "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources", and that there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz and cristobalite." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans* (*Group 1*)." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances studied. 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 68, "Silica, Some Silicates..." (1997).

NTP - The National Toxicology Program, in its Sixth Annual Report on Carcinogens, concluded that "silica, crystalline (respirable)" may reasonably be anticipated to be a carcinogen, based on sufficient evidence in experimental animals and limited evidence in humans.

OSHA - Crystalline silica (quartz) is not regulated by the U. S. Occupational Safety and Health Administration as a carcinogen.

There is substantial literature on the issues of the carcinogenicity of crystalline silica, which the reader should consult for additional information. A summary of the literature is set forth in "Exposure to crystalline silica and risk of lung cancer; the epidemiological evidence", Thorax, Volume 51, pp. 97-102 (1996). The official statement of the American Thoracic Society on the issue of silica carcinogenicity was published in "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997). The official statement concluded that "The available data support the conclusion that silicosis produces increased risk for bronchogenic carcinoma. The cancer risk may also be increased by smoking and other carcinogens in the workplace. Epidemiologic studies provide convincing evidence for increased cancer risks among tobacco smokers with silicosis. Less information is available for never-smokers and for workers exposed to silica but who do not have silicosis. For workers with silicosis, the risks for lung cancer are relatively high and consistent among various countries and investigators. Silicosis should be considered a condition that predisposes workers to an increased risk of lung cancer." Id. at 763.

C. SCLERODERMA

There is evidence that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of scleroderma, an immune system disorder manifested by a fibrosis (scarring) of the lungs, skin and other internal organs. Recently, the American Thoracic Society noted that "there is persuasive evidence relating scleroderma to occupational silica exposures in settings where there is appreciable silicosis risk." The following may be consulted for additional information on silica, silicosis and scleroderma (also known as progressive systemic sclerosis): Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994). "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

D. TUBERCULOSIS

Individuals with silicosis are at increased risk to develop tuberculosis, if exposed to persons with tuberculosis. The following may be consulted for further information: Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994). "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

E. NEPHROTOXICITY

There are several recent studies suggesting that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of kidney disorders. The following may be consulted for additional information on silica, silicosis and nephrotoxicity: Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994). "Further evidence of human silica nephrotoxicity in occupationally exposed workers", British Journal of Industrial Medicine, Vol. 50, No. 10, pp. 907-912 (1993). "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

FELDSPAR

Feldspar has not been associated with chronic pulmonary fibrosis. Feldspar (aplite) has not been classified as a carcinogen. There is no evidence of an association between feldspar and scleroderma and nephrotoxicity.

SECTION 12 - ECOLOGICAL INFORMATION

Aplite is a naturally-occurring inert material which is not expected to exert an ecotoxic effect or bioconcentrate in the food chain.

SECTION 13 - DISPOSAL CONSIDERATIONS

Dispose of according to applicable federal, state, and local regulations. Dispose per 40 CFR 261 and 262.

SECTION 14 - TRANSPORT INFORMATION

U.S. Department of Transportation (DOT): Not Classified

SECTION 15 - REGULATORY INFORMATION

Canadian WHMIS: D2A

OSHA Hazard Communication Rule, 29 CFR 1910.1200: This product is hazardous under the criteria of this rule.

EPCRA Section 302 (EHSs): This product does not contain ingredients subject to reporting requirements of 40 CFR Part 355, Appendices A and B (Extremely Hazardous Substances).

CERCLA, Section 304: This product does not contain ingredients subject to state and local reporting under Section 304 of SARA Title III as listed in 40 CFR Part 302, Table 302.4

SARA 313 Reporting Requirements: This product does not contain ingredients subject to the reporting requirements of Section 313 SARA, and Section 6607 of the Pollution Prevention Act:

SARA Hazard Category: 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 (SARA Title III) and by definition meets the requirements of the following category: Chronic Health Hazard

SECTION 16 - OTHER INFORMATION

Revision Date: 03/10/98

Hazardous Material Information System (HMIS):

KEY TO ABBREVIATIONS:

ACGIH:	American Conference of Governmental Industrial Hygienists
CAS:	Chemical Abstracts Service
(C):	Ceiling Limit
DOT:	Department of Transportation
IARC:	International Agency for Research on Cancer
MSHA:	Mine Safety and Health Administration
NFPA:	National Fire Protection Association
NIOSH:	National Institute for Occupational Safety and Health
NTP:	National Toxicology Program
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit
SARA:	Superfund Amendment and Reauthorization Act
TLV:	Threshold Limit Value

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