1. IDENTIFICATION

Product identifier: Aplite

Chemical Name or Synonym: Sodium/Calcium/Potassium aluminosilicate (feldspar); Crystalline Silica (Quartz)

Recommended use of the chemical and restrictions on use: Used in glass manufacture; should not be used as abrasive blast media (should not be used for sandblasting)

Manufacturer:
U.S. Silica Company
24275 Katy Freeway, Suite 600
Katy, TX 77494
U.S.A.

Phone: 800-243-7500
Emergency Phone: 844-468-7263
(Monday through Friday- 9 to 4 pm Central Standard Time)
Fax: 281-394-9017

2. HAZARD(S) IDENTIFICATION

Classification:

<table>
<thead>
<tr>
<th>Physical</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Hazardous</td>
<td>Carcinogen Category 1A</td>
</tr>
<tr>
<td></td>
<td>Specific Target Organ Toxicity – Repeated Exposure Category 1</td>
</tr>
</tbody>
</table>

Label Elements:

DANGER
May cause cancer by inhalation.
Causes damage to lungs through prolonged or repeated exposure by inhalation.

Response:
If exposed or concerned: Get medical advice.

Disposal:
Dispose of contents/containers in accordance with national and local regulation

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust.
Do not eat, drink or smoke when using this product.
Wear safety glasses or goggles.
In case of inadequate ventilation wear respiratory protection.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feldspar</td>
<td>68476-25-5</td>
<td>90-97%</td>
</tr>
<tr>
<td>Crystalline Silica (quartz)</td>
<td>14808-60-7</td>
<td>3-10%</td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES

Inhalation: First aid is not generally required. If irritation develops from breathing dust, move the person from the overexposure and seek medical attention if needed.

Skin contact: First aid is not required.

Date of preparation/revision: December 19, 2019
**Eye contact:** Wash immediately with plenty of water. Do not rub eyes. If irritation persists, seek medical attention.

**Ingestion:** First aid is not required.

**Most important symptoms/effects, acute and delayed:** Particulates may cause abrasive eye injury. Inhalation of dust may cause respiratory tract irritation. Symptoms of exposure may include cough, sore throat, nasal congestion, sneezing, wheezing and shortness of breath. Prolonged inhalation of respirable crystalline silica above certain concentrations may cause lung diseases, including silicosis and lung cancer.

**Indication of immediate medical attention and special treatment, if necessary:** Immediate medical attention is not required.

## 5. FIRE-FIGHTING MEASURES

**Suitable (and unsuitable) extinguishing media:** Use extinguishing media appropriate for surrounding fire.

**Specific hazards arising from the chemical:** Product is not flammable, combustible or explosive.

**Special protective equipment and precautions for fire-fighters:** None required.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment, and emergency procedures:** Wear appropriate protective clothing and respiratory protection (see Section 8). Do not generate airborne dust during clean-up.

**Environmental precautions:** No specific precautions. Report releases to regulatory authorities if required by local, state and federal regulations.

**Methods and materials for containment and cleaning up:** Do not dry sweep. Do not use compressed air to clean spilled product. Use water spraying/flushing or ventilated or HEPA filtered vacuum cleaning system, or wet before sweeping. Dispose of in closed containers.

## 7. HANDLING AND STORAGE

**Precautions for safe handling:**

Respirable crystalline silica dust may be in the air without a visible dust cloud. Use adequate exhaust ventilation and dust collection to reduce respirable crystalline silica dust levels to below the permissible exposure limit (“PEL”). Maintain and test ventilation and dust collection equipment. Use all available work practices to control dust exposures, such as water sprays. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Keep airborne dust concentrations below permissible exposure limits.

Where necessary to reduce exposures below the PEL or other applicable limit (if lower than the PEL), wear a respirator approved for silica containing dust when using, handling, storing or disposing of this product or bag. See Section 8, for further information on respirators. Do not alter the respirator. Do not wear a tight-fitting respirator with facial hair such as a beard or mustache that prevents a good seal between the respirator and face. Maintain, clean, and fit test respirators in accordance with applicable standards. Wash or vacuum clothing that has become dusty.

Participate in training, exposure monitoring, and health surveillance programs to monitor any potential adverse health effects that may be caused by breathing respirable crystalline silica. The OSHA Respirable Crystalline Silica Standards; 29CFR1910.1053, 1915.1053 and 1926.1053, the OSHA Hazard Communication Standard, 29 CFR Sections 1910.1200, 1915.1200, 1917.28, 1918.90, 1926.59 and 1928.21, and state and local worker or

**Date of preparation/revision:** December 19, 2019
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines:

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>NIOSH REL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feldspar (as particulates not otherwise classified)</td>
<td>5 mg/m³ TWA (respirable dust) 15 mg/m³ TWA (total dust)</td>
<td>None Established</td>
<td>None Established</td>
</tr>
<tr>
<td>Crystalline Silica (quartz)</td>
<td>0.05 mg/m³ TWA (respirable dust)</td>
<td>0.025 mg/m³ TWA (respirable dust)</td>
<td>0.05 mg/m³ TWA (respirable dust)</td>
</tr>
</tbody>
</table>

If crystalline silica (quartz) is heated to more than 870°C, quartz can change to a form of crystalline silica known as tridymite; if crystalline silica (quartz) is heated to more than 1470°C, quartz can change to a form of crystalline silica known as cristobalite.

Appropriate engineering controls: Use adequate general or local exhaust ventilation to maintain concentrations in the workplace below the applicable exposure limits listed above. Refer to OSHA Standards 29CFR1910.1053, 1915.1053 and 1926.1053 for additional information.

Respiratory protection: If it is not possible to reduce airborne exposure levels to below the OSHA PEL or other applicable limit with ventilation, use the table below to assist you in selecting respirators that will reduce personal exposures to below the OSHA PEL. This table is part of the OSHA Respirator Standard 29CFR1910.134(d). Assigned protection factor (APF) means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by the Standard. For example, an APF of 10 means that the respirator should reduce the airborne concentration of a particulate by a factor of 10, so that if the workplace concentration of a particulate was 150 µg/m³, then a respirator with an APF of 10 should reduce the concentration of particulate to 15 µg/m³. In additional a cartridge change-out schedule must be developed based on the concentrations in the workplace.

<table>
<thead>
<tr>
<th>Assigned Protection Factors⁵</th>
<th>Type of respirator¹,²</th>
<th>Quarter mask</th>
<th>Half mask</th>
<th>Full facepiece</th>
<th>Helmet/hood</th>
<th>Loose-fitting facepiece</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Air-Purifying Respirator</td>
<td></td>
<td>5</td>
<td>10</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Powered Air-Purifying Respirator (PAPR)</td>
<td></td>
<td>............</td>
<td>50</td>
<td>1,000</td>
<td>25/1,000</td>
<td>25</td>
</tr>
<tr>
<td>3. Supplied-Air Respirator (SAR) or Airline Respirator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of preparation/revision: December 19, 2019
### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance (physical state, color, etc.):** Tan granular material.  
**Odor:** None.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Odor threshold</strong></td>
<td>Not applicable (N/A)</td>
</tr>
<tr>
<td><strong>Melting point/freezing point</strong></td>
<td>2300°F/1260°C</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Flammable limits:</strong></td>
<td>LEL: Not applicable</td>
</tr>
<tr>
<td><strong>Vapor pressure</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>2.63 g/cc</td>
</tr>
<tr>
<td><strong>Partition coefficient: n-octanol/water</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Solubility(ies):</strong></td>
<td>Insoluble in water</td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Flammability (solid, gas):** Not applicable

### 10. STABILITY AND REACTIVITY

**Reactivity:** Not reactive under normal conditions of use.
Chemical stability: Stable
Possibility of hazardous reactions: Contact with powerful oxidizing agents, such as fluorine, chlorine trifluoride and oxygen difluoride, may cause fires.
Conditions to avoid: Avoid generation of dust in handling and use.
Incompatible materials: Powerful oxidizers such as fluorine, chlorine trifluoride, and oxygen difluoride and hydrofluoric acid.
Hazardous decomposition products: Silica will dissolve in hydrofluoric acid and produce a corrosive gas, silicon tetrafluoride.

11. TOXICOLOGICAL INFORMATION

Acute effects of exposure:
Inhalation: Inhalation of dust may cause respiratory tract irritation. Symptoms of exposure may include cough, sore throat, nasal congestion, sneezing, wheezing and shortness of breath.
Ingestion: Ingestion is an unlikely route of exposure. If dust is swallowed, it may irritate the mouth and throat.
Skin contact: No adverse effects are expected.
Eye contact: Particulates may cause abrasive injury.

Chronic effects: Prolonged inhalation of respirable crystalline silica may cause lung disease, silicosis, lung cancer and other effects as indicated below.

The method of exposure that can lead to the adverse health effects described below is inhalation.

A. SILICOSIS
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 (10 to 20 or more) of prolonged repeated inhalation of 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. Complicated silicosis or PMF symptoms, if present, are shortness of breath and cough. 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 prolonged repeated inhalation of high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that lung lesions appear earlier and progression is more rapid.

Acute Silicosis can occur after the repeated inhalation of very high concentrations of respirable crystalline silica over a short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough, weakness and weight loss. Acute silicosis is fatal.

B. CANCER
IARC - The International Agency for Research on Cancer ("IARC") concluded that “crystalline silica in the form of quartz or cristobalite dust is carcinogenic to humans (Group 1)”. For further information on the

NTP classifies “Silica, Crystalline (respirable size)” as known to be a human carcinogen.

**C. AUTOIMMUNE DISEASES**
Several studies have reported excess cases of several autoimmune disorders -- scleroderma, systemic lupus erythematosus, and rheumatoid arthritis -- among silica-exposed workers.

**D. TUBERCULOSIS**
Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to tuberculosis bacteria. Individuals with chronic silicosis have a three-fold higher risk of contracting tuberculosis than similar individuals without silicosis.

**E. KIDNEY DISEASE**
Several studies have reported excess cases of kidney diseases, including end stage renal disease, among silica-exposed workers. For additional information on the subject, the following may be consulted: "Kidney Disease and Silicosis", Nephron, Volume 85, pp. 14-19 (2000).

**F. NON-MALIGNANT RESPIRATORY DISEASES**
The reader is referred to Section 3.5 of the NIOSH Special Hazard Review cited below for information concerning the association between exposure to crystalline silica and chronic bronchitis, emphysema and small airways disease. There are studies that disclose an association between dusts found in various mining occupations and non-malignant respiratory diseases, particularly among smokers. It is unclear whether the observed associations exist only with underlying silicosis, only among smokers, or result from exposure to mineral dusts generally (independent of the presence or absence of crystalline silica, or the level of crystalline silica in the dust).

**Sources of information:**
The NIOSH Hazard Review - Occupational Effects of Occupational Exposure to Respirable Crystalline Silica published in April 2002 summarizes and discusses the medical and epidemiological literature on the health risks and diseases associated with occupational exposures to respirable crystalline silica. The NIOSH Hazard Review is available from NIOSH - Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226, or through the NIOSH web site, www.cdc.gov/niosh/topics/silica, then click on the link “NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica” found under “Hazard Review”.

For a more recent review of the health effects of respirable crystalline silica, the reader may consult Fishman’s Pulmonary Diseases and Disorders, Fourth Edition, Chapter 57. “Coal Workers’ Lung Diseases and Silicosis”.

The US Occupational Safety and Health Administration (OSHA) Crystalline Silica Standards 29CFR1910.1053, 1915.1053 and 1926.1053, Appendix B describes the silica related diseases and provides resources and references.

**Numerical measures of toxicity:**
Crystalline Silica (quartz): LD50 oral rat >22,500 mg/kg
Feldspar: No data available. No acute toxicity expected.
12. ECOLOGICAL INFORMATION

Ecotoxicity: Aplite is not known to be ecotoxic.
Persistence and degradability: Aplite is not degradable.
Bioaccumulative potential: Aplite is not bioaccumulative.
Mobility in soil: Aplite is not mobile in soil.
Other adverse effects: No data available

13. DISPOSAL CONSIDERATIONS

Discard any product, residue, disposable container or liner in full compliance with national regulations.

14. TRANSPORT INFORMATION

The following applies to all modes of transportation.

UN number: None
UN proper shipping name: Not regulated
Transport hazard classes(es): None
Packing group, if applicable: None
Environmental hazards: None

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not determined
Special precautions: None known.

15. REGULATORY INFORMATION

UNITED STATES (FEDERAL AND STATE)

TSCA Status: All ingredients are listed on the EPA TSCA inventory or exempt.

RCRA: This product is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: This product is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): This product contains the following chemicals subject to SARA 302 or SARA 313 reporting: None above the de minimus concentrations.

Clean Air Act: This product is not processed with or does not contain any Class I or Class II ozone depleting substances.

California Proposition 65: Crystalline silica (airborne particles of respirable size) is classified as a substance known to the State of California to be a carcinogen.

California Inhalation Reference Exposure Level (REL): California established a chronic non-cancer effect REL of 3 μg/m³ for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no non-cancer health effects are anticipated in individuals indefinitely exposed to the substance at that
Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is “toxic” for purposes of the Massachusetts Toxic Use Reduction Act.

Pennsylvania Worker and Community Right to Know Act: Quartz is a hazardous substance under the Act, but it is not a special hazardous substance or an environmental hazardous substance.

Texas Commission on Environmental Quality: The Texas CEQ has established chronic and acute Reference Values and short term and long term Effects Screening Levels for crystalline silica (quartz). The information can be accessed through www.tceq.texas.gov.

CANADA

Domestic Substances List: U. S. Silica Company products, as naturally occurring substances, are on the Canadian DSL.

OTHER NATIONAL INVENTORIES

Australian Inventory of Chemical Substances (AICS): All of the components of this product are listed on the AICS inventory or exempt from notification requirements.

China: All of the components of this product are listed on the IECSC inventory or exempt from notification requirements.

Japan Ministry of International Trade and Industry (MITI): All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law Registry.

Korea Existing Chemicals Inventory (KECI) (set up under the Toxic Chemical Control Law): Listed on the ECL.

New Zealand: All of the components of this product are listed on the HSNO inventory or exempt from notification requirements.

Philippines Inventory of Chemicals and Chemical Substances (PICCS): Listed for PICCS.

Taiwan: All of the components of this product are listed on the CSNN inventory or exempt from notification requirements.

16. OTHER INFORMATION

Date of preparation/revision: December 19, 2019

Hazardous Material Information System (HMIS):
Health *
Flammability 0
Physical Hazard 0
Protective Equipment E
* For further information on health effects, see Sections 2, 8 and 11 of this SDS.

National Fire Protection Association (NFPA):
Health 0
Web Sites with Information about Effects of Crystalline Silica Exposure:

The Occupational Safety and Health Administration (OSHA) web site contains information on the OSHA standard related to respirable crystalline silica at https://www.osha.gov/dsg/topics/silicacrystalline/index.html.

The U.S. National Institute for Occupational Safety and Health (NIOSH) maintains a site with information about crystalline silica and its potential health effects at http://www.cdc.gov/niosh/topics/silica.

The IARC Monograph that includes crystalline silica, Volume 100C, can be accessed in PDF form at the IARC web site, http://monographs.iarc.fr/ENG/Monographs/PDFs/index.php.

U. S. Silica Company Disclaimer
The information and recommendations contained herein are based upon data believed to be up to-date and correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects that may be caused by purchase, resale, use or exposure to our material. Customers and users of this material must comply with all applicable health and safety laws, regulations, and orders. In particular, they are under an obligation to carry out a risk assessment for the particular work places and to take adequate risk management measures in accordance with the national implementation legislation of EU Directives 89/391 and 98/24.

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