Product Name: SNOW*TEX® 45; calcined kaolin clay
Product Description: Anhydrous aluminum silicate; crystalline silica (quartz)

1. Identification of the Substance and of the Company

1.1. Identification of the Substance

Product Name / Trade Names: SNOW*TEX® 45
(SNOW*TEX 45 is a registered trademark of U. S. Silica Company)

Chemical Name or Synonym:
Anhydrous aluminum silicate;
Crystalline Silica (quartz)

1.2. Use of the Substance

Main Applications (non-exhaustive list): Adhesives, pharmaceuticals, insecticides, glazes, paper, paints, refractories, sanitaryware, tableware, cosmetics, fertilizers, fiberglass, plastics, rubber, sealants, tiles, etc.

1.3. Company / Producer

U. S. Silica Company
8490 Progress Drive
Suite 300
Frederick, MD 21701
U.S.A.
Phone: 800-243-7500
Emergency Phone: 301-682-0600
Fax: 301-682-0690

2. Hazards Identification

Dust generated during handling and use may contain respirable crystalline silica. Prolonged inhalation to respirable crystalline silica may cause silicosis. Occupational exposure to respirable dust in general and respirable crystalline silica should be monitored.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Component/CAS #</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anhydrous aluminum silicate (calcined kaolin clay)</td>
<td>CAS No.: 92704-41-1</td>
</tr>
<tr>
<td>Quartz (crystalline silica)</td>
<td>CAS No.: 14808-60-7</td>
</tr>
</tbody>
</table>
4. First Aid Measures

4.1. **Eye Exposure:**
Wash immediately with plenty of water. If irritation persists, seek medical attention.

4.2. **Skin Exposure:**
Not applicable.

4.3. **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 SNOW*TEX 45, remove the person immediately to fresh air, give artificial respiration as needed, seek medical attention as needed.

4.4. **Ingestion:**
Not applicable.

5. Fire Fighting Measures

5.1. **Fire Hazard Data:**

   **Autoignition:**
   Not applicable.

   **Flash Point:**
   Not applicable.

   **Flammability Limits (vol / vol%):**
   Lower: Not applicable. Upper: Not applicable.

   **Extinguishing Media:**
   Product is not flammable, combustible or explosive. Use extinguishing media appropriate for surrounding fire.

   **Special Fire Fighting Procedures:**
   Use self contained breathing apparatus with full face mask.

   **Unusual Fire and Explosion Hazards:**
   None

6. Accidental Release Measures

6.1. **Personal Precautions:**
Avoid dust formation. In case of dust exposure, wear protective equipment specified in Section 8 of this Safety Data Sheet.

   Environmental precautions: No specific precautions. Discard any product, residue, disposable container or liner in compliance with regulatory requirements.
Methods for cleaning up: Avoid dry sweeping. Use water spraying / flushing or ventilated vacuum cleaning system. Use closed containers.

7. Handling and Storage

7.1. Handling
Avoid dust formation. Do not breathe dust. Use adequate exhaust ventilation and dust collection. Keep airborne dust concentrations below permissible national exposure limits. Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be in the air without a visible dust cloud. In case of insufficient ventilation, wear a respirator approved for silica dust when using, handling, storing or disposing of this product or bag. See Section 8, for further information on respirators. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Maintain, clean, and fit test respirators in accordance with OSHA and/or NIOSH standards. Maintain and test ventilation and dust collection equipment. Wash or vacuum clothing that has become dusty.

7.2. Storage
Ensure trapping of dust produced during loading and unloading. Keep containers closed and store bags as to avoid accidental bursting.

7.3. Specific Uses
Apply safe handling recommendations in Section 7.1.

8. Exposure Controls / Personal Protection

8.1. Exposure Limit Values:
The kaolin limits set forth are for respirable dust with less than 1% crystalline silica. The dust associated with the use of calcined kaolin should be analyzed for crystalline silica and kaolin; if the dust contains greater than 1% crystalline silica, then the exposure limits for crystalline silica are applicable.

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS No.</th>
<th>Percentage (by wt.)</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>NIOSH REL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalline Silica (quartz)</td>
<td>14808-60-7</td>
<td>7-12</td>
<td>TWA: .025</td>
<td>STEL: None</td>
<td>mg/m³</td>
</tr>
<tr>
<td>Calcined kaolin</td>
<td>92704-41-1</td>
<td>88-93</td>
<td>TWA: .05</td>
<td>STEL: .05</td>
<td>mg/m³</td>
</tr>
</tbody>
</table>

8.2. Exposure Controls

8.2.1. Occupational Exposure Controls

Engineering Controls:
Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in Section 8.1 of this Safety Data Sheet.
Respiratory Protection

In the event that exposure cannot be reduced to below permissible exposure levels (see above), wear a personal respirator in approved by NIOSH for use with respirable crystalline silica dust and with an assigned protection factor sufficient to reduce the personal exposure below permissible exposure levels. The assigned protection factor (APF) is the minimum anticipated level of protection provided by each type of respirator worn in accordance with an adequate respiratory protection program. 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 ug/m$^3$, then a respirator with an APF of 10 should reduce the concentration of particulate to 15 ug/m$^3$.

Eye / Face Protection:
If eye contact while using product may be anticipated, wear appropriate safety glasses with side shields.

Skin Protection:
Wear chemical resistant gloves (such as latex or neoprene) and protective clothing to minimize skin contact. Substance may have drying effect on skin. Maintain good industrial hygiene. Protection recommended for workers suffering from dermatitis or sensitive skin.

8.2.2. Environmental Exposure Controls

No special requirements. There is no reported ecotoxicity for silica, a naturally occurring substance abundantly present.

9. Physical and Chemical Properties

9.1. General Information

9.1.1. Crystalline Silica

<table>
<thead>
<tr>
<th>Property</th>
<th>Calcined Kaolin</th>
<th>Crystalline Silica</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>6.0 – 8.0</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>2.58</td>
<td>2.65</td>
</tr>
<tr>
<td>Melting Point</td>
<td>1735°C - 1790°C</td>
<td>1545°C</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>Not Determined</td>
<td>4046°F/2230°C</td>
</tr>
<tr>
<td>Flashpoint</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Flammability</td>
<td>non-flammable</td>
<td>non-flammable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>non-explosive</td>
<td>non-explosive</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not Determined</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
### Relative Density:
Not Applicable  Not Applicable

### Solubility:
- Will dissolve in hydrochloric acid and perchloric acid
- Will dissolve in hydrofluoric acid, producing corrosive silicon tetrafluoride gas

### Water Solubility:
Insoluble  Insoluble

### Percent Volatiles by Volume:
0  0

### Viscosity:
Not Applicable  Not Applicable

### Molecular Weight:
222.13  60.08

### 10. Stability and Reactivity

10.1. **Chemical Stability:**
Stable

10.2. **Conditions to Avoid:**
None

10.3. **Materials / Chemicals to Be Avoided:**
Contact with powerful oxidizing agents, such as fluorine, chlorine trifluoride and oxygen difluoride, may cause fires.

10.4. **Hazardous Decomposition Products:**
Silica will dissolve in hydrofluoric acid and produce a corrosive gas – silicon tetrafluoride.

10.5. **Hazardous Polymerization:**
Will not occur.

### 11. Toxicological Information

The potential adverse health effects of exposure to respirable crystalline silica (quartz) are addressed here, since they are of greater concern (and more serious) than those associated with exposure to kaolin. For exposure to respirable crystalline silica, the following information is applicable

#### 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 (often referred to as Simple 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 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 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 studies. 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).

The EU Scientific Committee for occupational exposure limits (SCOEL) concluded in June 2002 (SCOEL Sum Doc. 94-final): "The main effect in humans of inhalation of respirable silica dust is silicosis. There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore preventing the onset of silicosis will also reduce the cancer risk."

C. AUTOIMMUNE DISEASES
Several studies have reported excess cases of several autoimmune disorders, -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis -- among silica-exposed workers. For a review of the subject, the following may be consulted: "Occupational Exposure to Crystalline Silica and Autoimmune Disease", Environmental Health Perspectives, Volume 107, Supplement 5, pp. 793-802 (1999); "Occupational Scleroderma", Current Opinion in Rheumatology, Volume 11, pp. 490-494 (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: Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994); "Risk of pulmonary tuberculosis relative to silicosis and exposure to silica dust in South African gold miners," Occup Environ Med., Volume 55, pp.496-502 (1998).

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* should be consulted for additional information, and citations to published studies on health risks and diseases associated with occupational exposure 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](http://www.cdc.gov/niosh/topics/silica), then click on the link “NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica”.

### 12. Ecological Information

12.1. Ecotoxicological Information:
Calcined kaolin clay and crystalline silica are not known to be ecotoxic; i.e., there are no data that suggests that calcined kaolin or crystalline silica (quartz) is toxic to birds, fish, invertebrates, microorganisms or plants.

### 13. Disposal Considerations

13.1. Waste Disposal Method:
Discard any product, residue, disposable container or liner in full compliance with national regulations.

13.2. Container Handling and Disposal:
Dispose of container and unused contents in accordance with national regulations.

### 14. Transportation Information

**Shipping Name:** SNOW*TEX 45 (calcined kaolin)

Calcined kaolin and crystalline silica (quartz) are not hazardous materials for purposes of transportation under the U.S. Department Transportation Table of Hazardous Materials, 49 CFR §172.101.

<table>
<thead>
<tr>
<th>ADR/RID/IMO/ICAO /US DOT</th>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
<th>ID Number</th>
<th>Packaging Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Regulated</td>
<td>Not Regulated</td>
<td>Not Regulated</td>
<td>Not Regulated</td>
</tr>
</tbody>
</table>
15. Regulatory Information

Canadian WHMIS: D2A

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

EEC Label (Risk/Safety Phrases) Per EU 67/548: R 48/20, S22, S38

EC CLP (Hazard Class/Hazard Statement/Precaution Statements) Per EC 1272/2008:
STOT RE1/ H372/ P260, P285, P501

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.

16. Other Information

Hazardous Material Information System (HMIS):
Health *
Flammability 0
Reactivity 0
Protective Equipment E

* For further information on health effects, see Sections 2 and 11 of this MSDS.

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 silica. Customers and users of silica 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.

February 2011