



**POTENTIAL HEALTH EFFECTS**

EYE: Particulate matter may scratch the cornea or cause other mechanical injury to the eye.

SKIN: None.

INGESTION: Relatively non-toxic. Ingestion is not anticipated under normal working conditions.

INHALATION: Inhalation of high concentrations of dust may cause coughing and mild, transitory respiratory irritation.

SIGNS AND SYMPTOMS: Scratching or physical damage to the eyes can cause irritation, redness, pain, tear formation, blurred vision, and light sensitivity. Symptoms of silicosis include phlegm, coughing, characteristic x-rays, decreased pulmonary function and decreased capacity to work.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Long-term dust exposure may aggravate pre-existing respiratory disease.

CHRONIC: Inhalation of high dust concentrations may result in over-exposure to respirable crystalline silica. If inhaled in sufficient quantities over time, respirable silica can cause fibrotic disabling lung disease (silicosis) and increase the risks of developing respiratory cancer.

Studies indicate that fused silica may have a fibrogenic potential similar but slightly less than that of quartz.

TARGET ORGANS: Lungs

CARCINOGENICITY: NTP: Yes IARC: Yes (Group 1) OSHA: Yes

IARC and NTP classify respirable crystalline silica as a confirmed or known human carcinogen. Although OSHA has not promulgated a specific standard for crystalline silica, materials that contain  $\geq 0.1\%$  crystalline silica should be treated as a confirmed carcinogen for hazard communication purposes (29 CFR 1910.1200).

**4. FIRST AID MEASURES**

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

SKIN: Exposure not anticipated.

INHALATION: Not anticipated. If large amounts of dusts are inhaled, remove to fresh air. If breathing problems occur, a certified professional should administer oxygen or CPR if indicated. Seek immediate medical attention.

INGESTION: None required.

## C-E Minerals: MSDS for Spherical Silica (Teco Sphere ES)

### 5. FIRE FIGHTING MEASURES

#### FLAMMABLE PROPERTIES

FLASH POINT: Not Applicable

FLAMMABLE LIMITS: LEL: Not Applicable UEL: Not Applicable

#### NFPA CLASSIFICATION:

HEALTH: 0

FLAMMABILITY: 0

INSTABILITY: 0

EXTINGUISHING MEDIA: Any. Use media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARDS: Non-flammable, non-combustible. Product will not burn.

HAZARDOUS DECOMPOSITION PRODUCTS: None known. Amorphous silica may convert to crystalline silica at high temperature.

FIRE FIGHTING INSTRUCTIONS: Firefighters should wear a NIOSH/MSHA approved full-facepiece self-contained breathing apparatus (SCBA) operated in positive pressure mode and full turnout or bunker gear.

### 6. ACCIDENTAL RELEASE MEASURES

Isolate hazard area and deny entry to unauthorized and/or unprotected personnel. Do not walk through or otherwise scatter spilled material. For small spills, clean with a vacuum with a filtration system sufficient to remove and prevent recirculation of fused and 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 protective equipment including respiratory protection is essential for all clean-up personnel (See Section 8). Completely remove dusts to prevent recirculation of crystalline silica into the workplace.

### 7. HANDLING AND STORAGE

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. Dusts 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 dust.

Under dusty conditions, employees should wear coveralls or other suitable work clothing. Contaminated clothing must be vacuumed before removal. **DO NOT REMOVE** dusts 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. For further information, consult the American Society for Testing and Materials (ASTM) standard practice ASTM E 1132 Revision 99A, "Standard Practice for Health Requirements Relating to Occupational Exposure to Crystalline Silica".

## 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. Wear respiratory protection in accordance with 29 CFR Part 134.

**SKIN:** None required.

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

**ENGINEERING CONTROLS:** General ventilation used in combination with local exhaust and enclosed processes as necessary to control airborne contaminants at or below acceptable exposure guidelines.

**OTHER:** Where there is a potential exposure to free silica (cristobalite), the following warnings should be readily visible and posted near entrances or accessways to work areas: **WARNING! FREE SILICA WORK AREA.** Unauthorized persons keep out. The following warning should be posted within the work area where potential exposure may occur: **WARNING! FREE SILICA WORK AREA. Avoid Breathing Dust. May Cause Delayed Lung Injury (silicosis).** (NIOSH Criteria Document, Occupational Exposure to Crystalline Silica, pg. 5, 1974)

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

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|   |                                   |
|---|-----------------------------------|
| <b>APPEARANCE:</b>                            | White to grayish                  |
| <b>ODOR:</b>                                  | Odorless                          |
| <b>SOLUBILITY IN WATER:</b>                   | Insoluble                         |
| <b>SPECIFIC GRAVITY (H<sub>2</sub>O = 1):</b> | 2.2                               |
| <b>MELTING POINT:</b>                         | + 3000 °F (+ 1094 °C)             |
| <b>pH (10% slurry):</b>                       | 5.5-8                             |
| <b>% VOLATILE</b>                             | 0                                 |
| <b>TYPES:</b>                                 | Size range from cullet to powders |

## 10. STABILITY AND REACTIVITY

**STABILITY:** Stable

**REACTIVITY/INCOMPATIBILITY:** Silicon dioxide is incompatible with strong oxidizers (i.e.: fluorine, oxygen difluoride, and chlorine trifluoride).

**DECOMPOSITION PRODUCTS:** Amorphous silica may convert to cristobalite at high temperature.

**HAZARDOUS POLYMERIZATION:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

EYE: Particulate matter may cause physical injury to the eye.

SKIN: Skin irritation is not anticipated.

INHALATION: May cause minor transient respiratory irritation at high concentrations.

INGESTION: Product is relatively non-toxic if ingested.

CHRONIC: Limited data is available concerning the health effects of fused silica in animals or humans; however, animal studies indicate a fibrogenic potential less than that of quartz.

Silicosis is a progressive fibrotic pneumoconiosis which greatly decreases the ability of the lungs to provide oxygen (decreased pulmonary capacity). The extent and severity of lung injury depends on a variety of factors including particle size, percentage of silica, natural resistance, dust concentration and length of exposure. The damaged lungs will become increasingly less able to provide the body with oxygen causing tiredness, shortness of breath, decreased capacity to work, and can result in death by cardiac failure or by the destruction of lung tissue. Persons who develop silicosis have greatly increased risks of developing tuberculosis and workers who are exposed to crystalline silica and smoke have increased risks of lung damage. Silicosis may progress in the absence of continued exposure.

IARC has found inadequate evidence to link exposure to amorphous silica to cancer in animals.

OTHER: Silica particles < 10 µm are considered respirable; however, particles retained in the lungs are generally much smaller. Silica particles retained in the human lung have median diameters of 0.5-0.7 µm.

The amount of respirable silica present in TECO-SIL will vary with different grain sizes with powdery materials necessarily having a higher percentage of respirable material than coarse materials.

## 12. ECOLOGICAL INFORMATION

Fused Silica TECO-SIL is an inert material. It does not contain ozone depleting substances and is not expected to exert an ecotoxic effect or bioconcentrate in the food chain.

## 13. DISPOSAL CONSIDERATIONS

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

## 14. TRANSPORT INFORMATION

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

**15. REGULATORY INFORMATION**

CANADIAN WHMIS: D2A, D2B

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

CALIFORNIA PROPOSITION 65: This product contains crystalline silica, an ingredient known to the State of California to cause cancer.

TSCA (Toxic Substances Control Act): All ingredients contained in this product are on the TSCA inventory.

**16. OTHER INFORMATION**

Revision Date: 5/7/98 added Calif. Proposition 65 information and TSCA information.  
3/9/99 removed Spherical Silica from sheet % SiO<sub>2</sub> different.  
10/3/00 re-issued with no changes  
10/21/02 re-issued with 74CSS in Product Name  
8/15/03 Health and safety review and update

KEY:

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

**DISCLAIMER**

Although reasonable care has been taken in the preparation of the information contained herein, C-E Minerals extends no warranties, makes no representation and assumes no responsibility as to the accuracy of suitability of such information for application to purchaser's intended purposes or for consequences of its use.