

**1. PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME: Mulcoa® 47/Mulgrain 47  
 FORMULA: Not Applicable - Mixture  
 SUPPLIER: C-E Minerals  
 ADDRESS: 901 E. Eighth Avenue  
 King of Prussia, PA 19406  
 PHONE: (610)265-6880  
 EMERGENCY PHONE: (229)924-7170  
 DESCRIPTION: Mulcoa 47 is a calcined kaolin clay composed of approximately 47% alumina. Mulcoa 47 contains 15 to 25% cristobalite combined in a 65% Mullite and 10-20% glass matrix.

MANUFACTURER: C-E Minerals  
 ADDRESS: P.O. Box 37  
 Andersonville, GA 31711  
 PHONE: (229)924-7170

**2. INGREDIENTS: COMPOSITION/INFORMATION**

INGREDIENT	% WEIGHT	PEL-OSHA	TLV-ACGIH	LD 50/LC 50 ROUTE/SPECIES
Calcined Kaolin (Mullite) CAS No.: 1302-93-8 RTECS No.: No Data	65	15 mg/m <sup>3</sup> (total) 5 mg/m <sup>3</sup> (resp.) 10 mg/m <sup>3</sup> * (total) 5 mg/m <sup>3</sup> * (resp.) (as kaolin)	2 mg/m <sup>3</sup> (resp.)	No Data
Amorphous silica CAS No.: 7631-86-9 (Glass) RTECS No.: VV7310000	10-20	80 mg/m <sup>3</sup> /% SiO <sub>2</sub> or 20 mppcf 6 mg/m <sup>3</sup> *	10 mg/m <sup>3</sup> (total) 3 mg/m <sup>3</sup> (resp.)	No Data
Cristobalite CAS No.: 14464-46-1 RTECS No.: VV7325000	15-25	1/2[10 mg/m <sup>3</sup> / (%SiO <sub>2</sub> + 2)](resp.) 1/2[30 mg/m <sup>3</sup> / (% SiO <sub>2</sub> + 2)] (total) 0.05 mg/m <sup>3</sup> *	0.05 mg/m <sup>3</sup> (resp.)	No Data

\* 1989 Updated PELs effectively vacated by a July 1992 decision by the U.S. Court of Appeals for the Eleventh Circuit (AFL-CIO v. OSHA, 965 F2d 962; 11th Cir., 1992).

**3. HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW**

**Non-flammable gray to white granular material. Inhalation of high concentrations may cause upper respiratory irritation. Particulate matter may scratch the eyes. Acute exposure is not anticipated; however this product does contain crystalline silica (cristobalite). Long-term inhalation of respirable cristobalite can cause disabling lung disease (silicosis) and increase the risks of developing respiratory cancer. Avoid dust creation. Do not inhale dusts from this product. Do not use compressed air or dry sweeping to remove dusts from the work area. Use an appropriately equipped vacuum or wet clean-up methods to remove dusts.**

**C-E Minerals: MSDS for Mulcoa® 47/Mulgrain 47  
POTENTIAL HEALTH EFFECTS**

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

**SKIN:** None anticipated.

**INGESTION:** Non-toxic. Ingestion is not anticipated under normal working conditions.

**INHALATION:** Inhalation may cause respiratory irritation and coughing. Exposures to very high concentrations of crystalline silica in a short period of time have on rare occasions been reported to cause acute or rapidly-developing silicosis in which severe respiratory symptoms and death have occurred.

**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, and characteristic x-rays. 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. Shortness of breath upon exertion is one of the most common symptom of silicosis. Limited chest expansion is the most common physical sign.

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

**CHRONIC:** Reported inhalation of respirable cristobalite over a number of years can cause lung disease (silicosis) and increase the risks of developing respiratory cancer. 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 is dependent on the dust concentration and length of exposure.

Long-term exposure to kaolin dust has caused fibrosis in experimental animals and workers.

**TARGET ORGANS:** Lungs

**CARCINOGENICITY:** NTP: Yes IARC: Yes (Group 1) OSHA: No

The International Agency for Research on Cancer (IARC) classifies crystalline silica, inhaled as cristobalite from occupational sources as a confirmed human carcinogen. The National Toxicology Program (NTP) classifies cristobalite as "reasonably anticipated to be a human carcinogen".

#### **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 inhalation of high concentrations occurs, remove to fresh air. If breathing has stopped, a certified professional should give CPR. Seek immediate medical attention.

**INGESTION:** None required.

**5. FIRE FIGHTING MEASURES**

<b>FLAMMABLE PROPERTIES</b>		
FLASH POINT:	Not Applicable	
FLAMMABLE LIMITS:	LEL: Not Applicable	UEL: Not Applicable
<b>NFPA CLASSIFICATION:</b>		
HEALTH: 0	FLAMMABILITY: 0	REACTIVITY: 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:** Thermal decomposition may produce silica and aluminum oxides.

**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. 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.

**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 free quartz 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.

**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. For air concentrations above the PEL to 2.5 mg/m<sup>3</sup> crystalline silica, a NIOSH/MSHA approved full facepiece air-purifying respirator with a HEPA filter or powered air-purifying respirator with a tight-fitting facepiece and HEPA filter may be worn.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

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.

OTHER: Where there is a potential exposure to free silica (quartz), 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>	Gray to white granular material
<b>ODOR:</b>	Odorless
<b>SOLUBILITY IN WATER:</b>	Insoluble
<b>SPECIFIC GRAVITY (H<sub>2</sub>O = 1):</b>	2.64
<b>MELTING POINT:</b>	+ 3000 °F (+ 1650 °C)
<b>pH:</b>	6.5-8
<b>% VOLATILE</b>	0
<b>TYPES:</b>	Size - Kiln Run (approx. 1/2") to 325 Mesh Powder

**10. STABILITY AND REACTIVITY**

STABILITY: Stable

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

DECOMPOSITION PRODUCTS: Thermal decomposition products will produce silicon dioxide and aluminum oxide.

HAZARDOUS POLYMERIZATION: Will not occur.

**11. TOXICOLOGICAL INFORMATION**

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

SKIN: Skin irritation is not anticipated.

## 11. TOXICOLOGICAL INFORMATION

**INHALATION:** Acute silicosis has been reported for exposure to extremely high crystalline silica exposures particularly when the particle size of the dust is very small. Acute silicosis is rapidly progressive with diffuse pulmonary involvement. The disease is often complicated by tuberculosis and can develop only months after the initial exposure with the possibility of death within 1 or 2 years.

**INGESTION:** Product is relatively non-toxic if ingested.

**CHRONIC:** Animal studies indicate that cristobalite has a greater potential to produce fibrosis than quartz. Cristobalite produces a more severe response than quartz and that fibrosis elicited is diffuse rather than nodular. Silicosis may be slowly progressive in the absence of continued exposure.

Kaolinosis exists in both simple and complicated forms. More complicated forms of kaolinosis are more often associated with respiratory symptoms and changes. Crystalline silica exposure appears to enhance the severity of kaolinosis. Data indicates that kaolin has the ability to induce a fibrogenic response in the absence of crystalline silica.

**SUBCHRONIC:** No Data

**OTHER:** Generally only relatively small crystalline silica particles ( $< 1 \mu\text{m}$ ) are considered fibrogenic (respirable). Silica particles retained in the human lung have median diameters of 0.5-0.7  $\mu\text{m}$ .

The amount of cristobalite present in Mulcoa 47 which is respirable will vary with different grain sizes. Powdery materials will necessarily have a higher percentage of respirable material than coarse materials.

## 12. ECOLOGICAL INFORMATION

Mulcoa 47 is a relatively inert material which 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

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200: This product is hazardous under the criteria of this rule.

**15. REGULATORY INFORMATION**

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.  
10/3/00 reissued with no changes  
8/27/01 updated new area code for manufacturing facility.

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.