

C-Crete Concrete

1. Identification

Product name:

C-Crete Concrete

Other means of identification/Synonyms/Common Names:

Freshly Mixed Unhardened Concrete, Alkali-Activated Slag Mix Geopolymer

Recommended use:

C-Crete Concrete is used as a construction material.

Recommended restrictions:

None Known

Manufacturer/Contact info:

Vulcan Materials Company and its subsidiaries and affiliates
1200 Urban Center Drive
Birmingham, AL 35242

General Phone Number:

1.866.401.5424

Emergency Phone Number:

1.866.401.5424 (3E Company, 24hours/day, 7 Days/week)

Website:

www.vulcanmaterials.com

2. Hazard(s) Identification

Physical hazards:

Not Classified

Signal word:

Danger

Health hazards:

Skin corrosion/irritation-Category 1B

Serious eye damage/eye irritation-Category 1

Carcinogenicity-Category 1A

Specific target organ toxicity, single exposure- Category 3

Specific target organ toxicity, repeated exposure- Category 1

Skin sensitization – Category 1B



Hazard Statement:

Causes severe skin burns and eye damage

May cause an allergic skin reaction

May cause cancer (Inhalation)

May cause respiratory irritation

May cause damage to organs (lung/respiratory system) through prolonged or repeated exposure (inhalation)

Precautionary statement:

Prevention

- Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
- Do not breathe dust, fume, or vapors. Use only outdoors or in a well-ventilated area.
- Wash hands, forearms, and face thoroughly after handling
- Use personal protective equipment as required. Wear protective gloves, protective clothing, eye protection, and face protection.

Response

- If exposed or concerned: Immediately call a Poison Center or doctor/physician. Get medical advice/attention

- Specific treatment (see the following information on this label)
- IF SWALLOWED: Rinse mouth Do NOT induce vomiting.
- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse cautiously with water for several minutes. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention.
- IF INHALED: Remove victim to fresh air and keep at rest position comfortable for breathing.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Wash contaminated clothing before reuse.

Disposal

- Dispose of contents/container in accordance with all local, regional, national, and international regulations.

Supplemental information:

C-Crete concrete contains a naturally occurring mineral complex with varying quantities of quartz (crystalline silica). Respirable Crystalline Silica (RCS) may cause cancer. Hardened C-Crete concrete may be subjected to various natural or mechanical forces that produce small particles (dust) which may contain respirable crystalline silica (particles less than 10 micrometers in aerodynamic diameter). Repeated inhalation of respirable crystalline silica (quartz) may cause lung cancer according to IARC, NTP; ACGIH states that it is a suspected cause of cancer. Wet C-Crete concrete is highly alkaline and can cause burns upon prolonged skin contact.

3. Composition/information on ingredients

Chemical name	CAS number	%
Aggregate (crushed stone, sand, gravel, expanded shale)	Mixture	60-95
Quartz (crystalline silica)	14808-60-7	>1
Slag Cement	65996-69-2	13
Add Mixtures	Mixture	0-3
Water	7732-18-5	6-16

4. First-aid measures

Inhalation:

Dusts from hardened product may irritate the mouth, nose, throat and lungs. Remove person to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

Eyes:

Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from eye(s). Contact a physician if irritation persists or later develops.

Skin:

Wash affected areas thoroughly with mild soap and fresh water. Contact a physician if irritation persists.

Ingestion:

If person is conscious do not induce vomiting. Give large quantity of water and get medical attention. Never attempt to make an unconscious person drink.

Most important symptoms/effects, acute and delayed:

Contact with wet product may result in chemical (caustic) burns and eye injury which may be progressive and could cause blindness. Wet product may result in chemical burns to the skin.

Dust may irritate the skin and respiratory tract. Breathing silica-containing dust for prolonged periods in the workplace can cause lung damage and a lung disease called silicosis. Symptoms of silicosis may include (but are not limited to) shortness of breath, difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure.

Indication of immediate medical attention and special treatment needed:

Not all individuals with silicosis will exhibit symptoms of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposures have ceased. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

For emergencies contact 3E Company at 1.866.401.5424 (24 hours/day, 7 days/week).

5. Fire-fighting measures
Suitable extinguishing media: This product is not flammable. Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing media: None known.
Specific hazards arising from the chemical: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 10 of SDS).
Special protective equipment and precautions for firefighters: Use protective equipment appropriate for surrounding materials.
Fire-fighting equipment/instructions: No unusual fire or explosion hazards noted. Not a combustible dust.
Specific methods: The presence of this material in a fire does not hinder the use of any standard extinguishing medium. Use extinguishing medium for surrounding fire.

6. Accidental release measures
Personal precautions, protective equipment and emergency procedures: Persons involved in cleanup processes should first observe precautions (as appropriate) identified in Section 8 of this SDS. For emergencies, contact 3E Company at 1-866-401-5424 (24 hours/day, 7 days/week).
Environmental precautions: Prevent from entering into sewers or drainage systems where it can harden and clog flow.
Methods and materials for containment and cleaning up: Wet product should be removed from roads or other surfaces where it may interfere with traffic. If hardened material is spilled and dust is generated, cleanup personnel may be exposed to respirable crystalline silica. Do not dry sweep or use compressed air for clean-up. Wetting of spilled material and/or use of respiratory protective equipment may be necessary.

7. Handling and storage
Precautions for safe handling: Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. Use personal protection and controls identified in Section 8 of this SDS as appropriate.
Conditions for safe storage, including any incompatibilities: Do not store near food, beverages, or smoking materials.

8. Exposure controls/personal protection

Legend:

NE = Not Established; PEL = Permissible Exposure Limit; TLV = Threshold Limit Value; REL = Recommended Exposure Limit; OSHA = Occupational Safety and Health Administration; MSHA = Mine Safety and Health Administration; NIOSH = National Institute for Occupational Safety and Health; ACGIH = American Conference of Governmental Industrial Hygienists

Component	OSHA/MSHA PEL	ACGIH TLV	NIOSH REL
Slag Cement	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)	10 mg/m ³ (respirable fraction)	10 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
Respirable dust containing silica	10 mg/m ³ ÷ (%silica + 2)	Use Respirable Silica TLV	Use Respirable Silica TLV
Total dust containing silica	MSHA: 30 mg/m ³ ÷ (% silica + 3)	NE	NE
Respirable Crystalline Silica (quartz)	OSHA/MSHA: 50 µg/m ³	0.025 mg/m ³	0.05 mg/m ³
Respirable Tridymite and Cristobalite (other forms of crystalline silica)	OSHA/MSHA: 50 µg/m ³	0.025 mg/m ³	0.05 mg/m ³
Amorphous Silica	20 mppcf (80 mg/m ³ /percent silica)	NE	6 mg/m ³
Iron Oxide	10 mg/m ³	5 mg/m ³ (respirable fraction)	5 mg/m ³ (respirable fraction)
Magnesium Oxide	15 mg/m ³ (total dust)	10 mg/m ³ (inhalable fraction)	NE
Aluminum Oxide	15 mg/m ³ (total dust) 5 mg/m ³ (Respirable)	10 mg/m ³ (total dust)	15 mg/m ³ (total dust) 5 mg/m ³ (Respirable)
Manganese Oxide	5 mg/m ³ (as Mn)	0.2 mg/m ³ (as Mn)	1 mg/m ³
Particulates Not Otherwise Classified	15 mg/m ³ /10 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)	10 mg/m ³ (inhalable fraction) 3 mg/m ³ (respirable fraction)	NE

Exposure Guidelines:

Respirable dust and quartz levels should be monitored regularly to determine worker exposure levels. Exposure levels in excess of allowable exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee workstations.

Engineering Controls:

Ordinarily not required when working with wet product. Activities that generate dust from hardened product require the use of general ventilation, local exhaust, and/or wet suppression methods adequate to maintain exposures below appropriate exposure limits.

Eye Protection:

Safety glasses with side shields should be worn as minimum protection. Goggles or face shield should be worn where splashing is possible. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated due to working with hardened product.

Skin Protection (Protective Gloves/Clothing):

Waterproof gloves, rubber boots, and clothing sufficient to protect skin from contact with wet product should be worn. Clothing saturated from contact with wet product should be removed promptly to prevent continued contact with skin. As a precaution, wash hands thoroughly before eating, smoking, and using toilet facilities. After working with product, workers should clean their skin with soap and water. Clean clothing should be worn after showering.

Respiratory Protection:

Ordinarily not required when working with wet product. Activities that generate dust from hardened dry product require the use of a NIOSH approved dust respirator for the exposure circumstances involved (See NIOSH Respirator Selection Guide). The need for respiratory protection should be evaluated by a qualified safety and health professional. Activities that generate dust require the use of an appropriate dust respirator where dust levels exceed or are likely to exceed allowable exposure limits. For respirable silica levels that exceed or are likely to exceed an 8 hr. Time Weighted Average (TWA) of 0.5 mg/m³, a high efficiency particulate filter respirator must be worn at a

minimum; however, if respirable silica levels exceed or are likely to exceed an 8 hr. TWA of 5.0 mg/m³ a positive pressure, full face respirator or equivalent is required. Respirator use must comply with applicable MSHA (42 CFR 84) or OSHA (29 CFR 1910.134) standards, which include provisions for a user training program, respirator inspection, repair and cleaning, respirator fit testing, medical surveillance and other requirements.

9. Physical and chemical properties

Appearance:

Off-white color when fluid.

Odor:

Chemical-type odor noticeable in partially enclosed areas.

PH:

Approximately 12

Decomposition temperature:

Not applicable

Melting point/freezing point:

Not applicable

Initial boiling point and boiling range:

Not applicable

Flash point:

Non-combustible

Evaporation rate:

Not applicable

Flammability:

Not applicable

Upper/lower flammability or explosive limits:

Not applicable

Vapor pressure:

Not applicable

Relative density:

Not applicable

Solubility:

0.1 - 1%

Partition coefficient: n-octanol/water.

Not applicable

Autoignition temperature:

Not applicable

Specific Gravity (H₂O = 1):

1.7 - 3.0

10. Stability and reactivity

Reactivity:

Not reactive under normal use.

Chemical stability:

Stable under normal temperatures and pressures.

Possibility of hazardous reactions:

None under normal use.

Conditions to avoid (e.g., static discharge, shock or vibration):

Contact with incompatible materials should be avoided (see below). See Sections 5 and 7 for additional information.

Incompatible materials:

Fresh concrete is caustic (pH approximately 12) and could react with strong acids. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.

Hazardous decomposition products:

Silica-containing respirable dust particles may be generated. When heated, quartz is slowly transformed into tridymite (above 860°C/1580°F) and cristobalite (above 1470°C/2678°F). Both tridymite and cristobalite are other forms of crystalline silica.

11. Toxicological information

Primary Routes of Exposure:

Inhalation and contact with the eyes and skin.

Symptoms related to the physical, chemical, toxicological characteristics

Inhalation:

Not expected to be a significant exposure route. Dusts from hardened product may irritate the mouth, nose, throat and lungs. Coughing, sneezing and shortness of breath may occur.

Symptoms of silicosis caused by chronic exposure to dust may include (but are not limited to) shortness of breath, difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Eye Contact:

Contact may result in chemical (caustic) burns and eye injury which may be progressive and could cause blindness. Symptoms may include tearing, redness, pain, swelling with blurred vision. Dusts from hardened product may be irritating.

Skin Contact:

May cause severe skin irritation with redness, pain, an itching or burning feeling, and swelling of the skin. More severe effects, including chemical (alkali) burns and skin ulcers may occur. Dusts from hardened product may be irritating and cause dermatitis after prolonged or repeated exposure.

Ingestion:

Direct contact with exposed tissues may result in severe irritation with pain, nausea, vomiting, and/or diarrhea and possibly chemical (alkali) burns.

Medical Conditions Aggravated by Exposure:

Irritated or broken skin increases chance of contact dermatitis. Pre-existing medical conditions that may be aggravated by exposure include disorders of the eye, skin and lung (including asthma and other breathing disorders). Smoking tobacco will impair the ability of the lungs to clear themselves of dust.

Delayed and immediate effects and also chronic effects from short- and long-term exposure:

Slag cement may contain trace amounts of hexavalent chromium. Hexavalent chromium has been associated in some individuals with causing allergic reactions which may be manifested as contact dermatitis and skin ulcerations. Individuals who develop allergies to skin sensitizers such as hexavalent chromium, may experience a reaction upon repeated contact with those compounds. Irritated or broken skin is more likely to develop further complications such as ulcers and infection.

The following information pertains to creating dust from hardened dry material:

Prolonged overexposure to respirable dusts in excess of allowable exposure limits can cause inflammation of the lungs leading to possible fibrotic changes, a medical condition known as pneumoconiosis.

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of allowable exposure limits may cause a chronic form of silicosis, an incurable lung disease that may result in permanent lung damage or death. Chronic silicosis generally occurs after 10 years or more of overexposure; a more accelerated type of silicosis may occur between 5 and 10 years of higher levels of exposure. In early stages of silicosis, not all individuals will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased.

Repeated overexposures to very high levels of respirable crystalline silica for periods as short as six months may cause acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with autoimmune disorders and other adverse health effects involving the kidney. In particular, the incidence of scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) appears to be higher in silicotic individuals. To date, the evidence does not conclusively determine a causal relationship between silica exposure and these adverse health effects.

Carcinogenicity:

Epidemiology studies on the association between crystalline silica exposure and lung cancer have had both positive and negative results. There is some speculation that the source and type of crystalline silica may play a role. Studies of persons with silicosis indicate an increased risk of developing lung cancer, a risk that increases with the level and duration of exposure. It is not clear whether lung cancer develops in non-silicotic patients. Several studies of silicotics do not account for lung cancer confounders, especially smoking, which have been shown to increase the risk of developing lung disorders, including emphysema and lung cancer.

In October 1996, an IARC Working Group designated respirable crystalline silica as carcinogenic (Group 1). In 2012, an IARC Working Group re-affirmed that inhalation of crystalline silica was a known human carcinogen. The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In the year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a

suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

Additional information on toxicological-effects:

Acute toxicity: Not classified

Skin corrosion/irritation: Causes severe skin burns and eye damage

Serious eye damage/eye irritation: Causes serious eye damage.

Respiratory sensitization: Not classified.

Skin sensitization: Not classified.

Germ cell Mutagenicity: Not classified

Carcinogenicity: May cause cancer (Inhalation).

Reproductive toxicity: Not classified

Specific target organ toxicity - single exposure: May cause respiratory irritation

Specific target organ- toxicity – repeated exposure: May causes damage to organs (lungs, respiratory system) through prolonged or repeated exposure (inhalation)

Aspiration toxicity: Not classified (not applicable- solid material)

12. Ecological information

Ecotoxicity (aquatic and terrestrial, where available):

Not determined

Persistence and degradability:

Not determined

Bioaccumulative potential.

Not determined

Mobility in soil.

Not determined

Other adverse effects.

Not determined

13. Disposal considerations

Safe handling and disposal of waste:

Material can be retained until it hardens, and then disposed of as solid waste. Place contaminated materials in appropriate containers and dispose of in a manner consistent with applicable federal, state, and local regulations. Prevent from entering drainage, sewer systems, and unintended bodies of water. It is the responsibility of the user to determine, at the time of disposal, whether product meets criteria for hazardous waste. Product uses, transformations, mixture and processes, may render the resulting material hazardous.

14. Transport information
UN Number: Not regulated.
UN Proper shipping name: Not regulated.
Transport Hazard class: Not applicable.
Packing group, if applicable: Not applicable.
Marine pollutant (Yes/No): Not applicable.

15. Regulatory information
Toxic Substances Control Act (TSCA): The components in this product are listed on the TSCA Inventory or are exempt.
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act.
Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III: Section 302 extremely hazardous substances: <u>None</u> Section 311/312 hazard categories: <u>Delayed Health</u> Section 313 reportable ingredients at or above de minimus concentrations: <u>None</u>
California Proposition 65: This product contains a chemical (crystalline silica, chromium, cobalt, nickel) known to the State of California to cause cancer.
State Regulatory Lists: Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list or all state regulations. Therefore, the user should review the components listed in Section 2 and consult state or local authorities for specific regulations that apply.

16. Other information
<u>Disclaimer</u>
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