SAFETY DATA SHEET
Respirable Crystalline Silica
(Quartz)

SECTION 1: IDENTIFICATION

Product Name: Artificial Quartz

Chemical Name: Silicon Dioxide (SiQ_2)

Synonyms: Respirable Quartz, Respirable Crystalline Silica (RCS), Flint, Tripoli, Sand (respirable fraction), Cristobalite (respirable fraction), Tridymite (respirable fraction)

CAS Numbers: 14808-60-7 (Quartz);
14464-46-1 (Cristobalite);
1317-95-9 (Tripoli as quartz);
15468-32-3 (Tridymite).

Recommended Use: Construction material intended for indoor use, primarily as countertop for kitchen and bath, flooring, sink, shower tray, wall panel, and other similar uses.

Restrictions on Use: Do not mechanically process the material using uncontrolled dry method. The hazard arises when the material is cut, ground, drilled, crushed, or otherwise processed to create respirable dust. Avoid activities that generate dust without proper controls. Avoid breathing dust.

Supplier Details:

Yunfu Zhongheng Stone Co., Ltd.
South Yunfu International Conference And Exhibition Center
No.168, South Beiyi Road, Chucheng Industrial Zone, Hekou Street Office,
Yuncheng District, Yunfu City, China
Tel: +86

Emergency Phone Number:

U.S.:
China:

SECTION 2: HAZARD(S) IDENTIFICATION

Classification: Crystalline Silica: 80-90 wt% (weight percent)

The product, when processed in a manner creating respirable dust, is classified according to OSHA Hazard Communication Standard and GHS as:

Carcinogenicity – Category 1A.

H350i: May cause cancer by inhalation.

Specific Target Organ Toxicity, Repeated Exposure – **Category 1:** Lungs.

H372: Causes damage to lungs through prolonged or repeated inhalation exposure.

Specific Target Organ Toxicity, Single Exposure – **Category 3:** Respiratory Tract Irritation.

H335: May cause respiratory irritation.

Label Information:

Hazard Pictograms:

Signal Word: DANGER

Hazard Statements:

- Carcinogenicity – Category 1A.
- STOT RE 1.
- STOT SE 3.
- H350i: May cause cancer (lung cancer) by inhalation.
- H372: Causes damage to lungs (silicosis, COPD) through prolonged or repeated inhalation exposure.
- H335: May cause respiratory irritation.

Precautionary Statements:

Prevention:

- P201: Obtain special instructions before use.
- P202: Do not handle until all safety precautions have been read and understood.
- P260: Do not breathe dust/fume/gas/mist/vapors/spray.
- P264: Wash hands and exposed skin thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product(s).
- P271: Use only outdoors or in a well-ventilated area.
- P280: Wear protective gloves/protective clothing/eye protection/face protection/respiratory protection for particle filtering (at least P3 or N95).

Response:

- P308 + P313: IF exposed or concerned: Get medical advice/attention.
- P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P314: Get medical advice/attention if you feel unwell.

Storage:

- P405: Store locked up.
- P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

Disposal:

- P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards:

Respirable crystalline silica causes Silicosis, an incurable and potentially fatal lung disease characterized by lung scarring.

Exposure can worsen or increase susceptibility to other lung conditions like tuberculosis (TB) and COPD.

Exposure is linked to kidney disease and autoimmune disorders (e.g., scleroderma, lupus).

The hazard is specifically associated with *respirable* particles (typically <10 micrometers) which can penetrate deep into the lungs. Larger particles are less hazardous.

Disease development often occurs after prolonged or repeated exposure, but acute or accelerated silicosis can occur after shorter periods of very high exposure. Damage can progress even after exposure ceases.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Composition (wt%): The material comprises inorganic mineral (80-90 wt%) that includes one or more of quartz, silica sand, glass, silicon, and ceramic particles in different proportions depending on the product; it also contains unsaturated polyester resin (10-15 wt%), and the rest (<5 wt%) is made up of pigments and additives.

Chemical Name: Silicon Dioxide (SiO_2)

CAS Number: 14808-60-7 (Quartz); 14464-46-1 (Cristobalite); 15468-32-3 (Tridymite).

Concentration: May be present at varying concentrations (from <1% to >99%) in sand, rock, concrete, mortar, brick, refractory materials, etc. This Safety Datasheet applies when respirable particles of this substance may be generated.
Mixture components subject to occupational exposure limits: Section 8.

SECTION 4: FIRST-AID MEASURES

General recommendations:
Have the label or Safety Data Sheet to hand when you call the emergency number or consult a doctor.
Move the affected person away from the source of the exposure. Give them fresh air and rest. Do not give the affected person anything to drink if they are unconscious.
The symptoms of poisoning may appear after exposure, meaning that if there is any concern or if an illness persists, call a doctor and show them this SDS.

Inhalation: Do not inhale dust produced by material processing. If respiratory difficulties appear, move the affected person from the exposure area to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Seek immediate medical attention if symptoms develop or exposure was significant. Inform medical personnel of potential crystalline silica exposure.

Skin Contact: Wash skin with soap and water. Seek medical attention if irritation develops.

Eye Contact: Immediately flush eyes with plenty of cold or room-temperature water for at least 15 minutes, lifting upper and lower eyelids occasionally. Prevent the affected person from rubbing or closing their eyes. Remove contact lenses if present and easy to do, as failure to do so may cause additional injury. Seek medical attention if irritation persists. Dust can cause mechanical irritation/abrasion.

Ingestion: Not considered a primary route of exposure for silicosis/cancer. If swallowed, rinse mouth with water. Do not induce vomiting. Seek medical attention if large amounts are swallowed or if symptoms occur.

Main Symptoms/Effects:

During the mechanical processing of this product, particularly if the processing recommendations of using water and suitable air filtering and venting systems are not followed, a fraction of fine particles of mineral dust and crystalline silica may be suspended in the air. Prolonged contact and/or large-scale inhalation of this respirable dust can cause pneumoconiosis, pulmonary fibrosis (commonly known as silicosis), lung cancer, chronic obstructive pulmonary disease and kidney disease.

Acute Symptoms/Effects: Cough, shortness of breath, irritation of eyes, nose, and throat (from dust).
Delayed/Chronic Symptoms/Effects: Persistent cough, shortness of breath (dyspnea) upon exertion, fatigue, weight loss, chest pain, fever (potential signs of silicosis, COPD, or lung cancer). Symptoms may take years to manifest.

Indication of Immediate Medical Attention and Special Treatment: Immediate medical attention is crucial for anyone with significant inhalation exposure or respiratory symptoms. Lung function testing and chest X-rays are important for diagnosis. Note the potential for delayed onset of disease (Silicosis, Cancer).

SECTION 5: FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Material is not combustible. Use extinguishing media appropriate for the surrounding fire (water spray, foam, dry chemical, polyvalent powder, CO_2).

Specific Hazards Arising from the Chemical: None. Material is stable and non-reactive in fire conditions. Packaging material may burn.

Special Protective Equipment and Precautions for Fire-Fighters: Wear self-contained breathing apparatus (SCBA) and full protective clothing appropriate for the surrounding fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Avoid breathing dust. Wear appropriate personal protective equipment, including NIOSH-approved respiratory protection suitable for the concentration of airborne dust (see Section 8). Evacuate unnecessary personnel from the area. Ventilate area if possible.

Environmental Precautions: Prevent dust from entering drains, sewers, or waterways.

Methods and Materials for Containment and Cleaning Up: DO NOT DRY SWEEP OR USE COMPRESSED AIR. Use dust-suppression methods (e.g., water mist) during cleanup. Collect spilled material using a HEPA-filtered vacuum cleaner or by wet sweeping/shoveling. Place recovered material into sealed, labeled containers (e.g., heavy-duty plastic bags or drums) for disposal. Clean spill area thoroughly.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:

- Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
- Avoid generating dust. Use engineering controls (Section 8) like wet methods and local exhaust ventilation.
- Do not breathe dust. Wear appropriate respiratory protection when controls are insufficient or not feasible.
- Practice good housekeeping. Avoid accumulation of dust. Clean up spills promptly using appropriate methods (Section 6).
- Do not use compressed air for cleaning surfaces or clothing.
- Practice good personal hygiene. Wash hands thoroughly after handling and before eating, drinking, smoking, or using the restroom. Do not eat, drink, or smoke in work areas.
- Remove contaminated clothing and protective equipment before entering eating areas. Launder contaminated clothing separately; do not take it home.

Conditions for Safe Storage, Including Any Incompatibilities: Store in tightly closed containers in a dry, well-ventilated place. Keep away from incompatible materials (see Section 10). Store locked up or in a designated area.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits (Respirable Crystalline Silica):

Permissible Exposure Limits – Annotated Table Z-1

Substance	CAS No.	Regulatory Limits		Recommended Limits		
		OSHA PEL		Cal/OSHA Permissible Exposure Limit (PEL) *(as of 11/12/2021)* **Regulated as carcinogenic**	NIOSH Recommended Exposure Limit (REL) *(as of 11/15/2021)* **Potential Occupational Carcinogen**	ACGIH Threshold Limit Value (TLV) **Suspected Human Carcinogen - A2**
		ppm	mg/m³	8-hour TWA (ST) STEL (C) Ceiling	Up to 10-hour TWA (ST) STEL (C) Ceiling	8-hour TWA
Silica, crystalline, respirable dust				OSHA Action Level (AL): 0.025 mg/m³ (8-hour TWA)		
Cristobalite;	14464-46-1			0.05 mg/m³	Ca 0.05 mg/m³	0.025 mg/m³
Quartz;	14808-60-7			0.05 mgm³	Ca 0.05 mg/m³	0.025 mg/m³
Tripoli (as quartz);	1317-95-9			0.05 mg/m³	Ca 0.05 mg/m³	
Tridymite;	15468-32-3			0.05 mg/m³	Ca 0.05 mg/m³	
Silica, fused, respirable dust	60676-86-0	See Annotated Z-3		See Annotated Z-3		

Permissible Exposure Limits – Annotated Table Z-3

Regulatory Limits				Recommended Limits	
OSHA PEL			Cal/OSHA PEL 8-hour TWA *(as of 11/12/2021)* Regulated as carcinogenic	NIOSH REL Up to 10-hour TWA *(as of 11/16/2021)* Potential Occupational Carcinogen	ACGIH TLV 8-hour TWA Suspected Human Carcinogen - A2
Substance	**mppcf**	**mg/m³**	**mg/m³**	**mg/m³**	
Silica: Crystalline					SILICA, CRYSTALLINE — α-QUARTZ AND CRISTOBALITE - ACGIH
Quartz (Respirable)	250[(A)] (%SiO2+5)	10 mg/m3[(B)] (%SiO2+2)	See Annotated Z-1	See Annotated Z-1	See Annotated Z-1
Cristobalite	Use ½ the value calculated from the count or mass formulae for quartz.		See Annotated Z-1	See Annotated Z-1	See Annotated Z-1
Tridymite	Use ½ the value calculated from the formulae for quartz.		See Annotated Z-1	See Annotated Z-1	See Annotated Z-1

Footnote (A): The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.
Footnote (B): Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:

Annotated Table Sources:
https://www.osha.gov/annotated-pels
https://www.acgih.org/silica-crystalline-a-quartz-and-cristobalite/

Note: To obtain up-to-date specific limits or limits for countries not listed here, please consult a competent health and safety professional or the local regulatory authority of the country in question. The occupational exposure levels herein are provided for information purposes only. They are not binding and do not need to be fully accurate.

Appropriate Engineering Controls: Use controls to keep exposures below the applicable PEL/TLV. Prioritize:

- **Wet Methods**: Use water delivery systems on tools (saws, grinders, drills) or apply water to materials/surfaces.
- **Local Exhaust Ventilation (LEV)**: Use vacuum dust collection systems with HEPA filters attached to tools or work areas.
- **Enclosure/Isolation**: Enclose the process or isolate the operator (e.g., control booths, barriers).
- General ventilation may help but is usually insufficient alone for high-dust tasks.

Individual Protection Measures (Personal Protective Equipment - PPE): Use PPE when engineering and work practice controls cannot maintain exposure below the OELs.

Respiratory Protection: Required when exposures exceed the PEL. Must be used within a comprehensive respiratory protection program (per OSHA 29 CFR 1910.134) including training, fit testing, and medical evaluation. Select a NIOSH-approved respirator based on exposure levels:

- < 10 x PEL: N95 filtering facepiece (minimum), or elastomeric half-mask with N, R, or P95/100 filters.
- < 50 x PEL: Elastomeric full facepiece with N, R, or P100 filters, or Powered Air-Purifying Respirator (PAPR) with HEPA filters.
- 50 x PEL: PAPR with HEPA filters or Supplied Air Respirator (SAR).

Eye/Face Protection: Wear safety glasses with side shields or tight-fitting goggles to protect against dust (per OSHA 29 CFR 1910.133). A face shield may be needed for high-dust operations.

Skin Protection: Wear gloves, boots, and protective clothing (e.g., coveralls) as needed to prevent skin irritation and contamination of personal clothes. Consider disposable coveralls.

Hygiene Measures: Follow practices outlined in Section 7. Provide access to washing facilities.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White or colorless solid, crystals or powder. Color may vary with source material.
Odor: Odorless

Odor Threshold: Not applicable
pH: Not applicable (insoluble solid)
Melting Point/Freezing Point: ~1710 °C (~3110 °F) (Quartz)
Initial Boiling Point and Boiling Range: ~2230 °C (~4046 °F) (Quartz)
Flash Point: Not applicable (non-flammable)
Evaporation Rate: Not applicable
Flammability (solid, gas): Not flammable
Upper/Lower Flammability or Explosive Limits: Not applicable
Vapor Pressure: Not applicable
Vapor Density: Not applicable
Relative Density (Specific Gravity): ~2130 to 2360 kg/m^3 (Quartz)
Solubility: Insoluble in water
Partition Coefficient: n-octanol/water: Not applicable
Auto-ignition Temperature: Not applicable
Decomposition Temperature: Not determined
Viscosity: Not applicable

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Generally not reactive under normal conditions.
Chemical Stability: Stable under normal ambient temperatures and pressures.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur. Can react with strong oxidizing agents (e.g., fluorine, chlorine trifluoride, manganese trioxide) at high temperatures. Contact with powerful oxidizing agents may cause fire. May dissolve in hydrofluoric acid, producing corrosive silicon tetrafluoride gas.
Conditions to Avoid: Generating airborne dust. Contact with incompatible materials.
Incompatible Materials: Strong oxidizing agents (fluorine, oxygen difluoride, chlorine trifluoride), hydrofluoric acid.
Hazardous Decomposition Products: None expected under normal use. Thermal decomposition is unlikely under normal industrial conditions. Contact with hydrofluoric acid yields silicon tetrafluoride gas.

SECTION 11: TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation (primary route for systemic effects), eye contact (irritation), skin contact (minor irritation).
Symptoms Related to Physical, Chemical, Toxicological Characteristics: See Section 4.
Delayed and Immediate Effects and Chronic Effects from Short- and Long-Term Exposure:

Immediate: Respiratory irritation, cough, eye irritation.
Delayed/Chronic: Silicosis (progressive fibrotic lung disease - chronic, accelerated, or acute forms), lung cancer, COPD (emphysema, chronic bronchitis), kidney disease, increased risk of tuberculosis, potential link to autoimmune diseases (scleroderma, rheumatoid arthritis, lupus). Effects are primarily due to prolonged or repeated inhalation of respirable particles.

Numerical Measures of Toxicity: Not applicable for primary endpoints (silicosis, cancer). Considered biologically inert via ingestion or skin contact routes for systemic effects.
Carcinogenicity:

- **NTP**: Known to be a human carcinogen (Respirable Crystalline Silica)
- **IARC**: Group 1: Carcinogenic to humans (Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources)
- **OSHA**: Regulated as a carcinogen.

Specific Target Organ Toxicity (STOT):

- **Single Exposure**: May cause respiratory tract irritation.
- **Repeated Exposure**: Causes damage to the lungs (Silicosis, fibrosis, contributes to COPD). Potential effects on kidneys.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: Crystalline silica is a naturally occurring abundant mineral. It is generally considered inert in the environment and not expected to be toxic to aquatic or terrestrial organisms. However, large deposits from spills could physically affect habitats.
Persistence and Degradability: Not biodegradable. Highly persistent in the environment.
Bioaccumulative Potential: Not expected to bioaccumulate.
Mobility in Soil: Negligible due to low water solubility.
Other Adverse Effects: None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Treatment Methods: Dispose of waste material in accordance with all applicable federal, state, provincial, and local environmental regulations. Preferred disposal is landfill. Avoid waste generation or minimize it wherever possible. Ensure waste containers are sealed to prevent dust dispersal. Characterize waste based on source and potential contaminants.

SECTION 14: TRANSPORT INFORMATION

UN Number: Not regulated
UN Proper Shipping Name: Not regulated
Transport Hazard Class(es): Not regulated
Packing Group: Not regulated
Environmental Hazards: Not applicable
Special Precautions: None specific, but ensure containers prevent dust release.

SECTION 15: REGULATORY INFORMATION

U.S. Federal Regulations:

OSHA: Hazard Communication Standard (29 CFR 1910.1200); Respirable Crystalline Silica standards (29 CFR 1910.1053, 1926.1153, MSHA 30 CFR Parts 56, 57, 70, 71, 72, 90).
TSCA: Listed on the TSCA inventory.
CERCLA: Not listed with a specific Reportable Quantity (RQ), but spills may be reportable under Section 304 if they contain hazardous substances above their RQs from the source material.
SARA Title III:

Section 302 (EHS): No
Section 311/312 Hazard Categories: Chronic Health Hazard, Carcinogenicity
Section 313 (TRI): Not listed

U.S. State Regulations:

California Proposition 65: WARNING: This product contains Crystalline Silica, which is known to the State of California to cause cancer.
State Right-to-Know Laws: Crystalline Silica (Quartz) is listed on various state hazardous substance lists (e.g., Massachusetts, New Jersey, Pennsylvania).

International Regulations: Listed on various international inventories (e.g., Canada DSL, EU EINECS).

SECTION 16: OTHER INFORMATION

Legislative texts and phrases:

STOT RE 1: Specific Target Organ Toxicity (repeated exposure). Category 1.
STOT RE 2: Specific Target Organ Toxicity (repeated exposure). Category 2.
STOT SE 3: Specific Target Organ Toxicity (single exposure). Category 3.
Carc. 1A: Carcinogenic. Category 1A.
Carc. 2: Suspected human carcinogen.
H372: Causes damage to organs through prolonged or repeated exposure.
H373: May cause damage to organs through prolonged or repeated exposure.
H350i: May cause cancer by inhalation.
H351i: Suspected of causing cancer via inhalation.
H335: May cause respiratory irritation.

Main sources:

https://www.osha.gov
https://www.cdc.gov
https://www.nih.gov
https://www.cdc.gov/niosh
https://www.iarc.who.int

https://www.acgih.org
https://www.msha.gov
https://www.dol.gov
https://www.reginfo.gov

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