



NATURAL STONE SAFETY DATA SHEET (SDS)

Effective Date: May 1, 2018

IDENTIFICATION

PRODUCT IDENTIFIER: **NATURAL STONE**

TRADE NAME: Stone, Marble, Quartz, Granite

SYNONYMS: Limestone, Veneer, Thin Veneer, Fieldstone, Drywall Stone, Landscaping Stone, Flagging, Cobblers, Steppers, Pavers, Gravel

RECOMMENDED USE AND RESTRICTION ON USE: Commercial and Residential construction.

MANUFACTURER INFORMATION:

Earthworks Stone
4287 N Highway 51
Perryville, MO 63775
Telephone: 573-547-9097
Contact: Safety Manager

SECTION II – HAZARD(S) IDENTIFICATION

HAZARD CLASSIFICATION:

- Category 1A Carcinogen
- Category 1 Specific Target Organ Toxicity (STOT) following repeated exposures
- Category 1 Eye Damage
- Category 1 Skin Corrosive

CARCINOGEN IRRITANT / RESPIRATORY TRACT IRRITATION



SIGNAL WORD: DANGER

NOTES: Not applicable for intact stone products. Excessive exposure to dust can cause discomfort, as well as, mechanical irritation.

HAZARD STATEMENTS:

May cause cancer by inhalation.

Prolonged or repeated exposure by inhalation causes damage to lungs, kidneys and autoimmune system. Causes severe skin burns and serious eye damage.

EMERGENCY OVERVIEW:

OSHA LISTS THESE AS CATEGORY "B" STONES (CONTAINING LESS THAN 1% CRYSTALLINE SILICA), CONSIDERED TO BE A NUISANCE PARTICULATE FROM DUST THAT CAN ACCUMULATE IN THE LUNGS. AVOID DUST PRODUCTION BY CUTTING UNDERWATER, AND USE PROTECTIVE BREATHING APPARATUS AND EYE PROTECTION, AS OUTLINED IN SECTION 8.

POTENTIAL HEALTH EFFECTS:

- EYES: Mechanical stress through eye rubbing if exposed to dust or airborne particulates
- SKIN: Skin irritation if exposed to dust or airborne particulates
- INGESTION: Potential choking hazard if exposed to airborne particulates
- INHALATION: Mechanical stress from inhalation of dust or airborne particulates
- ACUTE HEALTH HAZARDS: No further relevant information available.
- CHRONIC HEALTH HAZARDS: No further relevant information available
- MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: No further relevant information available

CARCINOGENICITY:

*: The composition of SiO₂ may be up to 100% crystalline silica. (R): Respirable (T): Total §: Crystalline silica is normally measured as respirable dust. The OSHA standard also presents a formula for calculation of the PEL based on total dust: 30 mg/m³ / (% SiO₂ + 2). #: Particulate matter containing no asbestos and <1% crystalline silica.

SECTION III – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT(S) CHEMICAL NAME:	CAS REGISTRY NO	% by weight (approximately)
Silicone Dioxide, SiO ₂ (1)	7631-86-9	45-75
Aluminum Oxide, Al ₂ O ₃	1344-28-1	10-20
Ferrous Oxide, FeO	1345-25-1	0-3
Ferric Oxide, Fe ₂ O ₃	1309-37-1	2-15
Magnesium Oxide, MgO	1309-48-4	1-8
Calcium Oxide, CaO	1305-78-8	2-12
Sodium Oxide, Na ₂ O	1313-59-3	1-4
Potassium Oxide, K ₂ O	12136-45-7	1-5
Titanium Oxide, TiO ₂	13463-67-7	0-3

SECTION IV – FIRST-AID MEASURES

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

SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.

INGESTION: If person is conscious, give large quantity of water and induce vomiting. However, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.

INHALATION: Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

SECTION VI – ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Persons involved in cleaning should first follow the precautions defined in Section VII of the SDS. Spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust and other components that may pose inhalation hazards. Do not dry sweep spilled material. Collect the material using a method that does not produce dust such as a High-Efficiency Particulate Air (HEPA) vacuum or thoroughly wetting down the dust before cleaning up. Wear appropriate personal protective equipment as specified in Section VIII including appropriate respirators during and following clean up or whenever airborne dust is present to ensure worker exposures remain below occupational exposure limits (OELs - Refer to Section VIII). Place the dust in a covered container appropriate for disposal. Dispose of the dust according to federal, state and local regulations.

This product is not subject to the reporting requirements of SARA Title III Section 313, and 40 CFR 372.

SECTION VII – HANDLING AND STORAGE

This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications. Follow protective controls set forth in Section VIII of this SDS when handling this product. Dust containing respirable crystalline silica and other components that may be corrosive/irritant may be generated during processing, handling and storage. Use good housekeeping procedures to prevent the accumulation of dust in the workplace.

Do not breathe dust. Avoid contact with skin and eyes. Do not store near food or beverages or smoking materials. Do not stand on piles of materials; it may be unstable.

Use adequate ventilation and dust collection equipment and ensure that the dust collection system is adequate to reduce airborne dust levels to below the appropriate OELs. If the airborne dust levels are above the appropriate OELs, use respiratory protection during the establishment of engineering controls. Refer to Section VIII - Exposure Controls/Personal Protection for further information.

In accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, 1928.21), state, and/or local right-to-know laws and regulations, familiarize your employees with this SDS and the information contained herein. Warn your employees, your customers and other third parties (in case of resale or distribution to others) of the potential health risks associated with the use of this product and train them in the appropriate use of personal protective equipment and engineering controls, which will reduce their risks of exposure.

See also ASTM International standard practice E 1132-06, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica."

For safe handling and use of this product for Hydraulic Fracturing, please see the OSHA/NIOSH Hazard Alert Worker Exposure to Silica during Hydraulic Fracturing DHHS (NIOSH) Publication No. 2012-166 (2012).

http://www.osha.gov/dts/hazardalerts/hydraulic_frac_hazard_alert.pdf

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne OELs for Components of Natural Stone:

COMPONENT(S) CHEMICAL NAME	MSHA/OSHA PEL	ACGIH TLV-TWA
Aluminum Oxide, Al ₂ O ₃	(T) 15 mg/m ³ , (R) 5 mg/m ³	(1) (R) 1 mg/m ³
Calcium Oxide, CaO	5 mg/m ³	2 mg/m ³
Ferric Oxide, Fe ₂ O ₃	(2) 10 mg/m ³	(R) 5 mg/m ³
Ferrous Oxide, Fe ₂ O ₃	--	--
Magnesium Oxide, MgO	(4) 15 mg/m ³	(I) 10 mg/m ³
Potassium Oxide, K ₂ O	--	(6) (C) 2 mg/m ³
Silicon Dioxide, SiO ₂	(R) 10 mg/m ³ / (% SiO ₂ =2) §	(R) 0.025 mg/m ³ #
Sodium Oxide, Na ₂ O (5)	2 mg/m ³	(C) 2 mg/m ³
Titanium Oxide, TiO ₂	15 mg/m ³	10 mg/m ³

§: Crystalline silica is normally measured as respirable dust. The OSHA/MSHA standard also presents a formula for calculation of the PEL based on total dust:

$$30 \text{ mg/m}^3 / (\% \text{ SiO}_2 + 2)$$

The OSHA/MSHA PEL listed is for dust containing crystalline silica (quartz) and is based on the silica content of the respirable dust sample. The OSHA/MSHA PEL for crystalline silica as tridymite and cristobalite is one-half the PEL for crystalline silica (quartz).

#: The ACGIH and NIOSH limits are for crystalline silica (quartz), independent of the dust concentration. The ACGIH TLV for crystalline silica as cristobalite is equal to the TLV for crystalline silica as quartz. In 2005, ACGIH withdrew the TLV for crystalline silica as tridymite. Refer to section X for thermal stability information for crystalline silica (quartz).

- (1) Limits based on Aluminum Metal and Insoluble Compounds
- (2) As Iron Oxide Fume
- (3) Dust and fume, as Iron
- (4) As Magnesium Oxide Fume total Particulate
- (5) Based on Sodium Hydroxide
- (6) Based on Potassium Hydroxide
- (R) Respirable fraction
- (T) Total Dust
- (I) Inhalable fraction
- (C) Ceiling Limit

Airborne OELs for Inert/Nuisance Dust

STANDARD	RESPIRABLE DUST	TOTAL DUST
MSHA/OSHA PEL (as Inert or Nuisance Dust)	5 mg/m ³	15 mg/m ³
ACGIH TLV (as particles not otherwise specified)	3 mg/m ³	*10 mg/m ³
NIOSH REL (particulates not otherwise regulated)	--	--

Note: The limits for Inert dust are provided as guidelines. Nuisance dust is limited to particulates not known to cause systemic injury or illness.

*The TLV provided is for inhalable particles not otherwise specified.

ENGINEERING CONTROLS

Ventilation: Use local exhaust, general ventilation or natural ventilation adequate to maintain exposures below the appropriate exposure limits.

Other control measures: Respirable dust and crystalline silica levels should be monitored regularly. Dust and crystalline silica levels in excess to the appropriate exposure limits should be reduced by implementing feasible engineering controls, including but not limited to:

- Dust suppression (wetting)
- Ventilation
- Process enclosure
- Enclosed employee work stations.

EYE/FACE PROTECTION

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated. If irritation persists, get medical attention immediately. There is potential for severe eye irritation if exposed to excessive concentrations of dust for those using contact lenses.

SKIN PROTECTION

Use appropriate protective gloves if manually handling the product.

RESPIRATORY PROTECTION

Respirator Recommendations:

For respirable crystalline silica levels that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved particulate filter respirator must be worn. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

For additional information contact NIOSH at 1-800-356-4674 or visit website:

<http://www.cdc.gov/niosh/npg> (search for crystalline silica). See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection," 29 CFR 1910.134 and 1926.103, and 42 CFR 84.

NIOSH recommendations for respiratory protection for crystalline silica include:

Up to 0.5 mg/m³: (APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering face pieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100. **Up to 1.25 mg/m³:** (APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate (100-series) filter. (APF = 25) Any supplied-air respirator operated in a continuous-flow mode

Up to 2.5 mg/m³: (APF = 50) Any air-purifying, full-face piece respirator with an N100, R100, or P100 filter.

(APF = 50) Any powered, air-purifying respirator with a tight-fitting face piece and a high-efficiency particulate filter

Up to 25 mg/m³: (APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions (50 mg/m³ for crystalline silica-quartz): A self-contained breathing apparatus (SCBA) that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Escape from unknown or IDLH conditions: An air-purifying, full-face piece respirator with a high-efficiency particulate (100-series) filter or any appropriate escape-type, self-contained breathing apparatus.

If the workplace airborne crystalline silica concentration is unknown for a given task, conduct air monitoring to determine the appropriate level of respiratory protection to be worn. Consult with a certified industrial hygienist, your insurance risk manager or the OSHA Consultative Services group for detailed information. Ensure appropriate respirators are worn, as needed, during and following the task, including clean up or whenever airborne dust is present, to ensure worker exposures remain below OELs.

GENERAL HYGIENE CONSIDERATIONS

There are no known hazards associated with this material when used as recommended. Following the guidelines in this SDS are recognized as good industrial hygiene practices. Avoid breathing dust. Avoid skin and eye contact. Wash dust-exposed skin with soap and water before eating, drinking, smoking and using toilet facilities. Wash work clothes after each use.

SECTION IX— PHYSICAL AND CHEMICAL PROPERTIES**(1) APPEARANCE****(2) ODOR AND ODOR THRESHOLD****(3) pH AND VISCOSITY****(4) MELTING POINT/FREEZING POINT****(5) BOILING POINT AND RANGE****(6) FLASH POINT AND FLAMMABILITY****(7) FLAMMABILITY/EXPLOSIVE LIMITS AND AUTOIGNITION TEMPERATURE****(8) EVAPORATION RATE AND DECOMPOSITION TEMPERATURE****(9) VAPOR PRESSURE AND VAPOR DENSITY IN AIR****(10) SPECIFIC GRAVITY****(11) SOLUBILITY IN WATER****(12) PARTITION COEFFICIENT: N-OCTANOL/WATER**

(1) Natural Stone is a mixture of angular particles, generally grey but can be multi-colored, ranging in size from sand to boulders.

(2) Odorless and N/A

(3) N/A

(4) N/A

(5) N/A

(6) N/A

(7) N/A

(8) N/A

(9) N/A

(10) 2.55-2.8

(11) Negligible

(12) N/A

SECTION X – STABILITY AND REACTIVITY

STABILITY: *Stable*

CONDITIONS TO AVOID:

Avoid contact with incompatible materials (see below).

THERMAL STABILITY:

If crystalline silica (quartz) is heated to more than 870°C (1598°F), it can change to a form of crystalline silica known as tridymite, and if crystalline silica (quartz) is heated to more than 1470°C (2678°F), it can change to a form of crystalline silica known as cristobalite.

INCOMPATIBILITY (Materials to avoid):

Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Silica dissolves in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.

HAZARDOUS DECOMPOSITION PRODUCTS:

Silica dissolves in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.

HAZARDOUS POLYMERIZATION: *Not known to polymerize*

SECTION XI – TOXICOLOGICAL INFORMATION

EXPOSURE LIMITS:

Below is a definition of exposure limits in the workplace, that is especially important when contact with this product and other chemicals is concurrent. Unless specified otherwise, limits are eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

INHALABLE PARTICULATE LIMITS:

- 2001 ACGIH TLV® = 10 mg/m³ (inhalable /total particulate, not otherwise specified)
- 2001 ACGIH TLV® = 3 mg/m³ (respirable particulate, not otherwise specified)
- OSHA PEL = 15 mg/m³ (total particulate, not otherwise regulated)
- OSHA PEL = 5 mg/m³ (respirable particulate, not otherwise regulated).

RESPIRABLE LIMIT, Crystalline Silica (SiO₂ or Quartz):

ACGIH TLV® = 0.05 mg/m³; MSHA and OSHA PEL = 10 mg/m³ (%SiO₂ + 2), for respirable dust containing crystalline silica.

TOTAL DUST LIMITS, RESPIREABLE AND NONRESPIRABLE:

1973 ACGIH TLV® = 30 mg/m³ ÷ (% quartz + 3). MSHA PEL = 10 mg/m³ for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV® booklet. [Appendix E includes: alundum (Al₂O₃); calcium carbonate; cellulose (paper fiber); Portland cement; corundum (Al₂O₃); emery; glass {fibrous (< 5-7 µm in diameter) or dust}; glycerin mist; graphite (synthetic); gypsum; vegetable oil mists (except castor, cashew nut, or similar irritant oils); kaolin; limestone; magnesite; marble; pentacrythritol; plaster of Paris rouge; silicon carbide; starch; sucrose; tin oxide; and titanium dioxide].

ROUTE OF ENTRY:

- Skin Contact
- Eye Contact
- Ingestion
- Acute Inhalation
- Chronic Inhalation

EFFECTS OF ACUTE EXPOSURE TO PRODUCT:

SKIN Direct contact may cause irritation by mechanical abrasion. Some components of material may cause mild corrosive effects to skin and mucous membranes. Skin absorption usually is not a significant route of exposure. EYES Direct contact may cause eye irritation by mechanical abrasion with discomfort or pain, local redness, and swelling of the conjunctiva may occur.

INHALATION:

If inhaled in the form of dust, it may cause nose, throat, and respiratory tract irritation by mechanical abrasion or corrosive action. Exposures in excess of appropriate exposure limits may cause coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur.

INGESTION:

Small amounts (a tablespoonful) swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts may cause gastro-intestinal irritation and/or blockage. Use of marble, limestone, onyx, or travertine for construction purposes should not cause acute toxic effects. However, inhaling respirable dust may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and or eye conditions.

EFFECTS OF CHRONIC EXPOSURE TO NATURAL STONE:

Quartz is a natural constituent of the Earth's crust and is not chemically combined with any other substance. Granite, limestone, quartz monzonite, and granodiorite contain 70% to 77% silica. Exposure to silica-containing dust at any time poses a potential health hazard. Repeated overexposure to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods of six months or more have caused acute silicosis. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms can appear at any time, even years after exposure has ceased. Symptoms include (but are not limited to): shortness of breath, diminished work capacity, cough, fever, right heart enlargement and/or failure, weight loss, and chest pain. Excessive inhalation of dust may result in respiratory disease, including silicosis, pneumoconiosis, and pulmonary fibrosis. Persons with silicosis have an increased risk of pulmonary tuberculosis infection. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. 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 sizes.

SECTION XII – ECOLOGICAL INFORMATION

There is no ecological data available for this product.

SECTION XIII – DISPOSAL CONSIDERATIONS

- Collect and reuse clean materials.
- Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

The above information applies to Earthworks product only, as sold. The product may be contaminated during use and it is the responsibility of the user to assess the appropriate disposal method in their situation.

SECTION XIV – TRANSPORT INFORMATION

DOT HAZARD CLASSIFICATION:

None

PLACARD REQUIRED:

None

LABEL REQUIRED:

Label as required by the OSHA Hazard Communication standard {29 CFR 1910.1200(f)}, and applicable state and local regulations.

SECTION XV – REGULATORY INFORMATION

OSHA: *Crystalline Silica is not listed as a carcinogen.*

SARA Title III: *Section 311 and 312: Immediate health hazard and delayed health hazard.*

TSCA.: *All components of the product appear on the EPA TSCA chemical substance inventory.*

RCRA: *The product is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.*

CERCLA: *The product is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 40 CFR §302.4*

EPCRA (Emergency Planning and Community Right to Know Act): *The product is not an extremely hazardous substance under regulations of the Emergency Planning and Community Right to Know Act, 40 CFR Part 355, Appendices A and B and is not a toxic chemical subject to the requirements of Section 313.*

Clean Air Act: *Crystalline silica (quartz) mined and processed by Stoneyard Inc was not processed with or does not contain any Class I or Class II ozone depleting substances.*

FDA: *Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR*

§175.300(b)(3). (The FDA standard primarily applies to products containing silica used in the coatings of food contact surfaces). California Proposition 65: Respirable crystalline silica and titanium dioxide is classified as a substance known to the state of California to be a carcinogen.

SECTION XVI – OTHER INFORMATION

User's Responsibility:

The OSHA Hazard Communication Standard 29 CFR 1910.1200 requires that this SDS be made available to your employees who handle or may be exposed to this product. Educate and train your employees regarding applicable precautions. Instruct your employees to handle this product properly.

Disclaimer:

The information contained in this document applies to this specific material as supplied and Earthworks believes that the information contained in this SDS is accurate. The suggested precautions and recommendations are based on recognized good work practices and experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance as not all use circumstances can be anticipated. It may not be valid for this material if it is used in combination with other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for one's own particular use. Since the actual use of the product described herein is beyond our control, Earthworks, assumes no liability arising out of the use of the product by others. Appropriate warnings and safe handling procedures should be provided to handlers and users. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulation, rules or insurance requirement. However, product must not be used in a manner which could result in harm.

Notice:

*Earthworks believes that the information contained on this Safety Data Sheet is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance.
Also, the suggestions should not be confused with or followed in violation of applicable laws, regulation, rules or insurance requirements.*

NO WARRANTY IS MADE, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

More information on the effects of crystalline silica exposure may be obtained from OSHA (phone number: 1-800-321-OSHA; website: <http://www.osha.gov>) or from NIOSH (phone number: 1-800-35-NIOSH; website: <http://www.cdc.gov/niosh>).