MATERIAL SAFETY DATA SHEET

Effective Date: 11-01-96
Replaces: 02-08-93

1 - IDENTIFICATION

CHEMICAL NAME	CHEMICAL FORMULA	MOLECULAR WEIGHT
Granite	Not applicable	Not applicable

TRADE NAME
Crushed Stone

SYNONYMS
Aggregate, Manufactured Sand

DOT IDENTIFICATION NO.
None

2 - PRODUCT AND COMPONENT DATA

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO.	% (APPROX.)	EXPOSURE LIMITS
Granite*	None	100	See Section 6
*Composition varies naturally - typically contains quartz (crystalline silica)	14808-60-7	>1	

3 - PHYSICAL DATA

APPEARANCE AND ODOR Angular particles, light salt-and-pepper colored, ranging in size from pebbles to boulders. No odor.	SPECIFIC GRAVITY 2.6 - 2.81
BOILING POINT (At 1 Atm.): Not applicable	VAPOR DENSITY IN AIR (Air = 1) Not applicable
VAPOR PRESSURE (mm Hg @ 20°C) Not applicable	% VOLATILE, BY VOLUME (@ 100°F) 0%
EVAPORATION RATE (at 1 Atm. and 25°C; n-butyl acetate = 1): 0	SOLUBILITY IN WATER Negligible

4 - REACTIVITY DATA

STABILITY	CONDITIONS TO AVOID
Stable	Avoid contact with incompatible materials (see below).

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-containing respirable dust particles may be generated by handling.

HAZARDOUS POLYMERIZATION

Not known to polymerize

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FLASHPOINT (Method used)	FLAMMABLE LIMITS IN AIR
Not flammable	Not flammable

EXTINGUISHING AGENTS
None required

UNUSUAL FIRE AND EXPLOSION HAZARDS
Contact with powerful oxidizing agents may cause fire and/or explosions (see Section 4 of this MSDS).

6 - TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.)

Unless specified otherwise, limits are expressed as 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.

ABBREVIATIONS: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL= permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL = permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.

Other Particulates: TLV = 10 mg/m^3 (inhalable/total particulate, not otherwise classified), TLV = 3 mg/m^3 (respirable particulate, not otherwise classified); OSHA PEL = 15 mg/m^3 (total particulate, not otherwise regulated), OSHA PEL = 5 mg/m^3 (respirable particulate, not otherwise regulated)

Respirable Crystalline Silica (quartz): TLV = 0.1 mg/m^3; MSHA and OSHA PEL = 10 mg/m^3 ÷ (%SiO_2 + 2); MSHA-Proposed and OSHA-Proposed PEL = 0.1 mg/m^3

Respirable Dust: MSHA and OSHA PEL = 10 mg/m^3 ÷ (%SiO_2 + 2)

Total Dust: MSHA PEL = 30 mg/m^3 ÷ (%SiO_2 + 3); OSHA PEL = 30 mg/m^3 ÷ (%SiO_2 + 2)

ACGIH, MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Inhaling respirable dust may aggravate existing respiratory system disease (s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

PRIMARY ROUTE(S) OF EXPOSURE: [X] Inhalation [ ] Skin [ ] Ingestion

ACUTE TOXICITY

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.

SKIN ABSORPTION: Not expected to be a significant exposure route.

INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

Use of granite for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused 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.

FIRST AID

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 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.

CHRONIC TOXICITY

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis 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. Symptoms of silicosis may include, but are not limited to, the following: 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. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

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 adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking.

Granite is not listed as a carcinogen by the International Agency on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated crystalline silica as carcinogenic (Group 1). The NTP indicates that crystalline silica is reasonably anticipated to be a carcinogen (Group 2) These classifications are based on their assessment of sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

7 - PERSONAL PROTECTION AND CONTROLS

RESPIRATORY PROTECTION

For respirable quartz levels that exceed or are likely to exceed an 8hr-TWA of 0.1 mg/m^3, a NIOSH/MSHA approved dust respirator must be worn. For respirable quartz levels that exceed or are likely to exceed an 8hr-TWA of 0.5 mg/m^3, a NIOSH/MSHA approved HEPA filter respirator must be worn. If respirable quartz levels exceed or are likely to exceed an 8hr-TWA of 5 mg/m^3, a NIOSH/MSHA approved positive pressure, full face respirator or equivalent is required. 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.

VENTILATION

Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

SKIN PROTECTION

See "Hygiene" section below.

EYE 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.

HYGIENE

Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

OTHER CONTROL MEASURES

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

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. The personal protection and controls identified in Section 7 of the MSDS should be applied as appropriate.

Do not store near food and beverages or smoking materials.

9 - SPILL, LEAK AND DISPOSAL PRACTICES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

The personal protection and controls identified in Section 7 of the MSDS should be applied as appropriate.

Spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

This product is not subject to the reporting requirements of Title III of SARA, 1986, and 40 CFR 372.

WASTE DISPOSAL METHOD

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

10 - TRANSPORTATION

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 laws and regulations.

For Further Information **Contact:**

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NOTICE: Becker Minerals, Inc. believes that the information contained on this Material Safety Data Sheet is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily all-inclusive nor fully adequate in every circumstance. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulations, rules or insurance requirements.

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