MATERIAL SAFETY DATA SHEET

Brookside Materials
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Date: 5-12

I – PRODUCT AND COMPANY IDENTIFICATION

CHEMICAL NAME CHEMICAL FORMULA MOLECULAR WEIGHT
Natural Sand Not Applicable Not Applicable

TRADE NAME
Sand

SYNONYMS DOT IDENTIFICATION NO.
Construction Aggregate None

II – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT(S)
CHEMICAL NAME
Natural Sand
*Quartz (Crystalline Silica)
CAS REGISTRY NO None 14808-60-7
% by weight (approx)100> 1*
MSHA/OSHA PEL
N/A
(R) 10 mg/m^3 / (%SiO_2+2) §
ACGIH TLV-TWA
N/A
(R) 0.025 mg/m^3

*Composition varies naturally. (R): Respirable. §: 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/m^3 / (% SiO_2 +2).

III – HAZARDS IDENTIFICATION

Natural sand is a naturally occurring granular material composed of angular or round multicolored rock and mineral particles. The composition of sand is highly variable, depending on the local rock sources and conditions. It is odorless and not flammable. Respirable dust particles containing silicon dioxide may be generated by handling natural sand. Inhalation of excessive particulate matter may cause respiratory problems. Crystalline silica, a component of this product, has been designated as a Group I carcinogen by IARC. The NTP has listed respirable crystalline silica as a known human carcinogen and ACGIH has listed respirable crystalline silica as a suspected human carcinogen (A-2 designation). OSHA does not list crystalline silica as a carcinogen. Health Effects: The information below represents an overview of health effects caused by overexposure to one or more components in natural sand. The individual effects are described in Section XI.

Primary routes(s) of exposure: _ Inhalation _ Skin _ Ingestion
EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion. Conjunctivitis may occur.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion. Some components of material are also known to cause mild corrosive effects to skin and mucous membranes.

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

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

INHALATION: Dust may irritate nose, throat, mucous membranes, and respiratory tract by mechanical abrasion. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits. Repeated excessive exposure may cause pneumoconiosis, such as silicosis and other respiratory effects.

Silicosis:
Use of natural sand for construction purposes is not believed to cause acute toxic effects. Repeated overexposures to respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as 6 months has caused acute silicosis. Symptoms of acute silicosis include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain. Acute silicosis is a rapidly progressive, incurable lung disease and is typically fatal. Chronic exposure to respirable quartz-containing dust in excess of appropriate exposure limits has caused silicosis, a progressive pneumoconiosis (lung disease). Restrictive and/or obstructive lung function changes may result from chronic exposure.

Lung Cancer:
Crystalline silica is classified by the International Agency For Research on Cancer (IARC) as a carcinogenic to humans (Group 1). Prolonged and repeated breathing of silica may cause lung cancer.

Tuberculosis:
Silicosis increases the risk of tuberculosis.

Autoimmune and Chronic Kidney Disease:
Some studies show excess number of cases of scleroderma, connective tissue disorders, lupus, rheumatoid arthritis, chronic kidney
diseases and end-stage kidney disease in worker exposed to respirable crystalline silica.

Non-Malignant Respiratory Diseases (other than Silicosis):
Some studies show an increased incidence in chronic bronchitis and emphysema in workers exposed to crystalline silica.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions. Smoking and obstructive / restrictive lung diseases may also exacerbate the effects of excessive exposure to this product.

IV – FIRST AID MEASURES

EYES: Immediately flush eye(s) with plenty of 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). Seek medical attention if irritation persists or develops later.

SKIN: Wash with soap and water. Seek medical attention if irritation persists or develops later.

INGESTION: First aid procedures not normally required. If gastrointestinal discomfort occurs, give a large quantity of water and induce vomiting. Never attempt to make an unconscious person drink or vomit. Get medical attention.

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

V – FIRE FIGHTING MEASURES

FLASHPOINT
Not Flammable

FLAMMABLE LIMITS IN AIR
Not Flammable

EXTINGUISHING AGENT
None required

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

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 MSDS. Spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable quartz-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.

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 MSDS when handling this product. Respirable quartz-containing dust may be generated during processing, handling and storage. 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.

VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS
Ventilation: Use local exhaust, general ventilation or natural ventilation adequate to maintain exposures below appropriate exposure limits. If a person breathes large amounts of this material, move the exposed person to fresh air at once; other measures are usually unnecessary. 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) dust suppression
(wetting), ventilation, process enclosure, and 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 product contacts the eyes, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn when working with this material.

SKIN PROTECTION
No personal protection recommended.

RESPIRATORY PROTECTION
Respirator Recommendations:
For respirable quartz levels that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved 100 series particulate filter respirator must be worn. If respirable quartz levels exceed or are likely to exceed an 8 hour-TWA of 0.5 mg/m_3, a NIOSH-approved air purifying, full-face respirator with a 100 series particulate filter must be worn. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator maintenance and

cleaning, respirator fit testing, and other requirements. For additional information contact NIOSH at 1-800-356-4674. Emergency or planned entry into unknown concentrations or IDLH conditions: Any self-contained breathing apparatus 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 fullface 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: Any air-purifying, full-face piece respirator with a high-efficiency particulate filter or any appropriate escape-type, self-contained breathing apparatus.

GENERAL HYGIENE CONSIDERATIONS
There are no known hazards associated with this material when used as recommended. Following the guidelines in this MSDS 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.

X – STABILITY AND REACTIVITY

STABILITY
Stable

CONDITIONS TO 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
None.

HAZARDOUS POLYMERIZATION
Not known to polymerize.

XI – TOXICOLOGICAL INFORMATION

This product is a mixture of components. The composition percentages are listed in Section II. Toxicological information for each component is listed below: Crystalline Silica: It is comprised of amorphous and crystalline forms of silica. In some batches, crystalline silica may represent up to 100% of silicon dioxide. Respirable crystalline silica (quartz):
ACGIH TLV= (R) 0.025 mg/m_3

MSHA and OSHA PEL:
Crystalline quartz (respirable): PEL-TWA 10 mg/m_3/ (%SiO_2 + 2).

IX – PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR
Angular or round multicolored particles; odorless.
SPECIFIC GRAVITY.
2.55-2.80

BOILING POINT
Not applicable

VAPOR DENSITY IN AIR (AIR = 1)
Not applicable

VAPOR PRESSURE

Not applicable
% VOLATILE, BY VOLUME
0%

EVAPORATION RATE
Not applicable

SOLUBILITY IN WATER
Negligible
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)
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 exposure limits. 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 and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions. Occupational exposure to free silica is known to produce silicosis, a chronic, disabling lung disease characterized by the formation of silica-containing nodules of scar tissue in the lungs. Simple silicosis, in which the nodules are less than 1 cm in diameter is generally asymptomatic but can be slowly progressive, even in the absence of continued exposure. Silicosis leads to conditions such as lung fibrosis and reduced pulmonary function. The form and severity in which silicosis manifests itself depends in part on the type and extent of exposure to silica dusts: chronic, accelerated and acute forms are all recognized. In later stages the critical condition may become disabling and potentially fatal. Restrictive and/or obstructive lung function changes may result from chronic exposure. A risk associated with silicosis is development of pulmonary tuberculosis (silico-tuberculosis). Respiratory insufficiencies due to massive fibrosis and reduced pulmonary function, possibly with accompanying heart failure, are other potential causes of death due to silicosis.

Symptoms of Silicosis: Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms may potentially appear years after exposures have ceased. Symptoms of silicosis may include (but arenot limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; heart enlargement and/or failure. Respirable dust containing newly broken 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 pieces of silica. There are reports in the literature indicating that 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 and immunity-related disorders. Several studies of persons with silicosis or silica exposure also indicate or suggest increased risk of developing lung cancer, a risk that may increase with the duration of exposure. Many of these studies of silicosis do not account for lung cancer confounders, especially smoking. In October 1996, an IARC Working group re-assessing crystalline silica, a component of this product, designated crystalline silica as a human carcinogen (Group 1carcinogen). The NTP indicates that crystalline silica is reasonably anticipated to be a human carcinogen (Group 2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and epidemiological studies of workers exposed to crystalline silica. Crystalline silica in October 1996 was listed on the Safe Drinking Water and Toxic Enforcement ACT of 1986 (California Proposition 65) as a chemical known to the state to cause cancer or reproductive toxicity.

XII – ECOLOGICAL INFORMATION
No data available

XIII – DISPOSAL CONSIDERATIONS
WASTE DISPOSAL METHOD
Collect and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

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.

XV – REGULATORY INFORMATION
Crystalline silica, a component of this product, is on the NTP and IARC carcinogen lists, but not on the OSHA carcinogen list. In October 1996, an IARC Working group re-assessing crystalline silica, a component of this product, designated crystalline silica as a human carcinogen (Group 1 carcinogen). Crystalline silica in October 1996 was listed on the Safe Drinking Water and Toxic Enforcement ACT of 1986 (CaliforniaProposition 65) as chemical known to the State to cause cancer or reproductive toxicity.

XVI – OTHER INFORMATION
ACGIH: American Conference of Governmental Industrial Hygienists
CFR: US Code of Federal Regulations
DOT: US Department of Transportation
IARC: International Agency for Research on Cancer
IDLH: Immediately Dangerous to Life and Health
NIOSH: National Institute for Occupational Safety and Health, US Department of Health and Human Services
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration, US Department of Labor
PEL: Permissible Exposure Limit
SARA Title III: Title III of the Superfund Amendments and Reauthorization Act, 1986
TLV: Threshold Limit Value

FOR FURTHER INFORMATION CONTACT: Brookside Materials LLC
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HOURS: 8 AM – 5 PM (EST)
DATE OF PREPARATION 5/12
NOTICE: Brookside Materials LLC believes that the information contained on this Material Safety Data Sheet 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. 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.

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