



Aggregate

MATERIAL SAFETY DATA SHEET

(Complies with OSHA 29 CFR 1910.1200)

SECTION I - PRODUCT IDENTIFICATION

PakMix, Inc.
618 S 223rd Street
Suite #3
Des Moines, WA 98198

Emergency Phone Number
800-272-5649

Information Telephone Number:
800-272-5649

Revision: May-10

PakMix® Product Name

PakMix® Pea gravel

SECTION II - HAZARD IDENTIFICATION

EMERGENCY OVERVIEW:

The product is a gravel and crushed stone or common sand. It is not flammable, combustible or explosive. It does not cause burns or severe skin or eye irritation. A single exposure will not result in serious adverse health effects. Crystalline silica (quartz) is not known to be an environmental hazard. Crystalline silica (quartz) is incompatible with hydrofluoric acid, fluorine, chlorine trifluoride or oxygen difluoride.

OSHA REGULATORY STATUS:

This material is considered hazardous under OSHA Hazard Communications Standard (29 CFR 1010.1200)

POTENTIAL HEALTH EFFECTS:

Inhalation:

- a. Silicosis Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs. Silicosis may be progressive; it may lead to disability and death.
- b. Lung Cancer Crystalline silica (quartz) inhaled from occupational sources is classified as carcinogenic to humans.

- c. Tuberculosis Silicosis increases the risk of tuberculosis.
- d. Autoimmune and Chronic Kidney Diseases Some studies show excess numbers of cases of scleroderma, connective tissue disorders, lupus, rheumatoid arthritis, chronic kidney diseases and end-stage kidney disease in workers exposed to respirable crystalline silica.
- e. Non-Malignant Respiratory Diseases (other than silicosis) Some studies show an increased incidence in chronic bronchitis and emphysema in workers exposed to respirable crystalline silica.

Eye Contact: Small particles can irritate eyes.

Skin Contact: Not applicable.

Ingestion: Not applicable.

Chronic Effects: The adverse health effects - silicosis, lung cancer, autoimmune and chronic kidney diseases, tuberculosis, and non-malignant respiratory diseases are chronic effects.

Signs and Symptoms of Exposure: Generally, these are no signs or symptoms of exposure to crystalline silica (quartz).

Medical Conditions Generally Aggravated by Exposure: The condition of individuals with lung disease (e.g. bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure.

See Section 11, Toxicological Information, for additional detail on potential adverse health effects.

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS No.	PEL(OSHA) mg/M ³	TLV(ACGIH) mg/M ³
Silica sand, crystalline	14808-60-7	<u>10</u> %SiO ₂ +2	0.05 (respirable)

Other Limits: National Institute for Occupational Safety and Health (NIOSH). Recommended standard maximum permissible concentration = 0.05 mg/M³ (respirable free silica) as determined by a full-shift sample up to 10-hour working day, 40-hour work week. See NIOSH Criteria for a Recommended Standard Occupational Exposure to Crystalline Silica.

SECTION IV - FIRST AID MEASURES

Eye Contact: Wash immediately with water. If irritation persists, seek medical attention.

Skin Contact: Not applicable.

Ingestion: Not applicable

Inhalation: No specific first-aid is necessary since the adverse health effects associated with exposure to crystalline silica result from chronic exposures. If there is a gross inhalation of crystalline silica, remove the person immediately to fresh air, give artificial respiration as needed, seek medical attention as needed.

SECTION V - FIRE AND EXPLOSION HAZARD DATA

Flammability: Noncombustible and not flammable or explosive.

Auto-ignition Temperature: Not Applicable.

Flash Points: Not Applicable.

SECTION VI - ACCIDENTAL RELEASE MEASURES

If spilled, use dustless methods (vacuum) and place into covered container for disposal (if not contaminated or wet). Use adequate ventilation to keep exposure to airborne contaminants below exposure limit.

Waste Disposal Method: See Section 13.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

Precautions During Handling and Use: Do not breath dust. Use adequate ventilation and dust collection. Keep airborne dust concentrations below permissible exposure limit ("PEL"). Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be in the air without a visible dust cloud. If crystalline silica dust cannot be kept below permissible limits, wear a respirator approved for silica dust when using, handling, storing or disposing of this product or bag. See Section 8 for further information on respirators. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Maintain, clean, and fit test respirators in accordance with OSHA regulations. Maintain and test ventilation and dust collection equipment. Wash or vacuum clothing that has become dusty. The OSHA Hazard Communication Standard, 29 CFR Sections 1910.1200, 1915.1200, 1917.28, 1918.90, 1926.59 and 1928.21, and state and local worker or community "right to know" laws and regulations should be strictly followed.

Do not use for sandblasting.

Precautions During Storage: Avoid breakage of bagged material or spills of bulk material. Use dustless methods (vacuum) and place into closable container for disposal, or flush with water. Do not dry sweep. See control measures in Section 8.

The OSHA Hazard Communication Standard, 29 CFR Sections 1910.1200, 1915.1200, 1917.28, 1918.90, 1926.59 and 1928.21, and state and local worker community "right-to-know" laws and regulations should be strictly followed. **WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS IN CASE OF RESALE) BY POSTING AND OTHER MEANS OF HAZARDS AND THE REQUIRED OSHA PRECAUTIONS. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT THE OSHA PRECAUTIONS.**

For additional precautions, see American Society for Testing and Materials (ASTM) standard practice E 1132-99a, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica."

SECTION VIII - EXPOSURE CONTROL MEASURES

Local Exhaust Ventilation: Use sufficient local exhaust ventilation to reduce the level of respirable crystalline silica to below the OSHA PEL. See ACGIH "Industrial Ventilation, a Manual of Recommended Practice" (latest edition).

Respiratory Protection: If it is not possible to reduce airborne exposure levels to below OSHA PEL with ventilation, use the table below to assist you in selecting respirators that will reduce personal exposures to below the OSHA PEL. This table is part of the NIOSH Respirator Selection Logic, 2004, Chapter III, Table 1, "Particulate Respirators". The full document can be found at www.cdc.gov/niosh/npptl/topics/respirators ; the user of this MSDS is directed to that site for information concerning respirator selection and use. The assigned protection factor (APF) is the minimum anticipated level of protection provided by each type of respirator worn in accordance with adequate

respiratory protection program. For example, an APF of 10 means that the respirator should reduce the airborne concentration of a particulate by a factor of 10, so that the workplace concentration of a particulate was 150 ug/m³, then a respirator with a APF of 10 should reduce the concentration of particulate to 15 ug/m³.

Assigned protection factor ¹	Type of Respirator (Use only NIOSH - certified respirators)
10	Any air-purifying elastomeric half-mask respirator equipped with appropriate type of particulate filter. ² Appropriate filtering face piece respirator. ^{2,3} Any air-purifying full face piece respirator equipped with appropriate type of particulate filter. ² Any negative pressure (demand) supplied-air respirator equipped with a half-mask.
25	Any powered air-purifying respirator equipped with a hood or helmet and a high efficiency (HEPA) filter. Any continuous flow supplied-air respirator equipped with a hood or helmet.
50	Any air-purifying full face piece respirator equipped with N-100, R-100 or P-100 filter(s). Any powered air-purifying respirator equipped with a tight-fitting face piece (half or full face piece) and a high-efficiency filter. Any negative pressure (demand) supplied-air respirator equipped with a full face piece. Any continuous flow supplied-air respirator equipped with a tight-fitting face piece (half or full face piece). Any negative pressure (demand) self-contained respirator equipped with a full face piece.
1,000	Any pressure-demand supplied-air respirator equipped with a half-mask.

1. The protection offered by the given respirator is contingent upon (1) the respirator user adhering to complete program requirements (such as ones required by OSHA in 29CFR1910.134), (2) the use of NIOSH-certified respirators in their approved configuration, and (3) individual fit testing to rule out those respirators that cannot achieve a good fit on individual workers.
2. Appropriate means that the filter medium will provide protection against the particulate in question.
3. An APF of 10 can only be achieved if the respirator is qualitatively or quantitatively fit tested on individual workers.

Exposure Guidelines - Note: Consult local authorities for acceptable exposure limits.

Component	CAS. No.	Percentage (by wt.)	OSHA PEL		ACGIH TLV		Unit
			TWA	STEL	TWA	STEL	
Crystalline Silica (quartz)	1480 8-60-7	99.0-99.9	<u>10</u> % %SiO ₂ +2	None	0.05	None	mg/m ³

If crystalline silica (quartz) is heated to more than 870°C, it can change to a form of crystalline silica known as tydimite; if crystalline silica (quartz) is heated to more than 1470°C, it can change to a form of crystalline silica known as cristobalite. The OSHA PEL for crystalline silica as trydimite or cristobalite is one-half of the OSHA PEL for crystalline silica (quartz).

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance:	Angular particles, light salt and pepper colored.		
Boiling Point:	Not applicable	Vapor Density:	Not Applicable
Specific Gravity:	2.6 to 2.81	Evaporation Rate:	Not Applicable
Vapor Pressure:	Not Applicable	Solubility in Water:	None
Melting Point:	Not applicable	Vapor Pressure:	Not Applicable
Odor:	None		

SECTION X - REACTIVITY DATA

Stability: Stable

Incompatibility (Materials to Avoid): Contact of silica with powerful oxidizing agents such as fluorine, chlorine trifluoride, and oxygen difluoride may cause fire.

Hazardous Decomposition or Byproducts: Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas - silicon tetra fluoride.

Route(s) of Entry: Inhalation, Skin, Ingestion

Acute Exposure: Product becomes alkaline when exposed to moisture. Exposure can dry skin, cause alkali burns and affect the mucous membranes. Dust can irritate the eyes and upper respiratory system. Toxic effects noted in animals include, for acute exposures, alveolar damage with pulmonary edema.

Chronic Exposure: Dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis.

Carcinogenicity: Since Portland cement and blended cements are manufactured from raw materials mined from the earth and process heat is provided by burning fossil fuels, trace, but detectable, amounts of naturally occurring, and possibly harmful, elements may be found during chemical analysis. Under ASTM standards, Portland cement may contain 0.75% insoluble residue. A fraction of these residues may be free crystalline silica. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs and possibly cancer. There is evidence that exposure to respirable silica or the disease silicosis is associated with an increased incidence of Scleroderma, tuberculosis and kidney disorders.

Carcinogenicity Listings:	NTP:	Known carcinogen
	OSHA:	Not listed as a carcinogen
	IARC Monographs:	Group 1 Carcinogen
	California Proposition 65:	Known carcinogen

NTP: The National Toxicology Program, in its "Ninth Report on Carcinogens" (released May 15, 2000) concluded that "Respirable crystalline silica (RCS), primarily quartz dusts occurring in industrial and occupational settings, is known to be a human carcinogen, based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to RCS and increased lung cancer rates in workers exposed to crystalline silica dust.

IARC: The International Agency for Research on Cancer concluded that there was sufficient evidence in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources and that there is sufficient evidence in experimental animals for the carcinogenicity of quartz or cristobalite. The overall IARC evaluation was that crystalline inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1). The IARC evaluation noted that carcinogenicity was not detected in all industrial circumstances or studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs. For further information on the IARC evaluation, see

IARC Monographs on the Evaluation of carcinogenic Risks to Humans.

Signs and Symptoms of Exposure: Symptoms of excessive exposure to dust include shortness of breath and reduced pulmonary function. Excessive exposure to skin and eyes especially when mixed with water can cause caustic burns as severe as third degree.

Medical Conditions Generally Aggravated by Exposure: Individuals with sensitive skin and with pulmonary and/or respiratory disease, including but not limited to, asthma and bronchitis, or subject to eye irritation, should be precluded from exposure.

Chronic Exposure: Dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis. (may contain trace (<0.05%) amounts of chromium salts or compounds including hexavalent chromium, or other metals found to be hazardous or toxic in some chemical forms. These metals are mostly present as trace substitutions within the principal minerals)

SECTION XII - ECOLOGICAL INFORMATION

Ecotoxicity: Crystalline silica (quartz) is not known to be ecotoxic.

BOD5 and COD: Not available

Products of Biodegradation: Not available

Toxicity of the Products of Biodegradation: Not available

Special Remarks on the Products of Biodegradation: Not available

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: The packaging and material may be landfilled; however, material should be covered to minimize generation of airborne dust. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117 & 302).

SECTION XIV - TRANSPORTATION INFORMATION

Non-Hazardous under U.S. DOT and TDG Regulations

SECTION XV - OTHER REGULATORY INFORMATION

UNITED STATES (FEDERAL AND STATE)

TSCA No.: Crystalline silica appears on the EPA TSCA inventory under the CAS No. 14808-60-7.

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

CERCLA: Crystalline silica is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): Crystalline silica is not extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.

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)(xxvi).

NTP: Respirable crystalline silica, primarily quartz dusts occurring in industrial and occupational settings, is classified as Known to be a Human Carcinogen.

OSHA Carcinogen: Crystalline silica (quartz) is not listed.

California Proposition 65: Crystalline silica (airborne particles of respirable size) is classified as a substance known to the State of California to be a carcinogen.

California Inhalation Reference Exposure Level (REL): California established a chronic REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no adverse health effects are anticipated in individuals indefinitely exposed to the substance

at that level.

Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

Pennsylvania Worker and Community Right to Know Act: Quartz is a hazardous substance under the ACT, but it is not a special hazardous substance or an environmental hazardous substance.

Canadian WHMIS: Considered to be a hazardous material under Hazardous Products Act as defined by the Controlled Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This product has been classified according to the hazard criteria of the Controlled Products Regulation (CPR). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the CPR.

SECTION XVI - OTHER INFORMATION

Abbreviations:

ACGIH	American Conference of Government Industrial Hygienists
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
CFR	Code of Federal Regulations
CPR	Controlled Products Regulations (Canada)
DOT	Department of Transportation
IARC	International Agency for Research
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicity Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
TLV	Threshold Limit Value
TWA	Time-weighted Average
WHMIS	Workplace Hazardous Material Information System

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