

SAFETY DATA SHEET



Date Prepared : 07/20/2015
MSDS No : Silica Products
Date-Revised : 04/18/2017
Revision No : 2

SILICA PRODUCTS

1. PRODUCT AND COMPANY IDENTIFICATION

MATERIAL: SILICA PRODUCTS
GENERAL USE: Refractory insulation

MANUFACTURER

Allied Mineral Products, Inc.
2700 Scioto Parkway
Columbus, OH 43221

Telephone: (614)-876-0244

E-Mail of person responsible for

SDS: sdsinfo@alliedmin.com

Allied Mineral Products Europe B.V.
Energieweg 5 4691 SE
Tholen, Netherlands

Telephone: +31-166 601200

Allied Refractory Products India Pvt. Ltd.
SM-5 Bol, G.I.D.C.
b/h Tata Nano, Tal.: Sanand
Dist.: Ahmedabad, Gujarat 3821705, India

Telephone: +91-2717-616800

联合矿产

天津塘沽海洋高新技术开发区燕山道 2 号
天津, 中国, 300459

Emergency Contact: 黄卫友

Telephone: +86-22-25210378

Allied Mineral Products South Africa (Pty) Ltd.
Crocker Road Wadeville Ext. 4
Wadeville Ext. 4

Germinston, 1407 South Africa

Telephone: +27-11-902-6930

Fabricados no Brasil para Allied Mineral Products, Inc.
De Togni S/A Materiais Refratarios

Telephone: +55-35-2101-2222

Fabricado en Chile para Allied Mineral Products, Inc.
Por Refractorios Iunge Ltda.

Telephone: (56-2) 2745-3613

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Health:

Target Organ Toxicity (Repeated exposure), Category 2

GHS LABEL



Health
hazard

SIGNAL WORD: WARNING

HAZARD STATEMENTS

H373: May cause damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state

SAFETY DATA SHEET



Date Prepared : 07/20/2015
MSDS No : Silica Products
Date-Revised : 04/18/2017
Revision No : 2

SILICA PRODUCTS

route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).

PRECAUTIONARY STATEMENT(S)

Prevention:

- P260: Do not breathe dust/fume/gas/mist/vapours/spray.
- P285: In case of inadequate ventilation wear respiratory protection.
- P501: Dispose of contents/container to ...

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS: Not Applicable

POTENTIAL HEALTH EFFECTS

EYES: Causes eye irritation.

SKIN: May cause skin irritation.

INGESTION: Not a likely route of entry.

INHALATION: Do not breathe dust as it may cause permanent lung injury (Silicosis). The IARC has classified crystalline silica inhaled in the form of quartz or cristobalite carcinogenic to humans (Group I).

US GHS Carcinogen Classification:



WARNING

Carcinogen, Category 1
H350: May Cause Cancer (Inhalation)

MEDICAL CONDITIONS AGGRAVATED: The condition of individuals with lung disease (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure.

ROUTES OF ENTRY: Inhalation

TARGET ORGAN STATEMENT: Respiratory system, skin

COMMENTS:

Crystalline silica exists in several forms, the most common of which is quartz. If crystalline silica (quartz) is heated to more than 870°C (1600°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 (2680°F), it can change to a form of crystalline silica known as cristobalite. Crystalline silica as tridymite and cristobalite are more fibrogenic than crystalline silica as quartz.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt. %	CAS
Silica, Crystalline quartz (non- respirable)	Up to 100	14808-60-7
Silica, Crystalline quartz (respirable fraction)	< 10	14808-60-7

SAFETY DATA SHEET



Date Prepared : 07/20/2015
MSDS No : Silica Products
Date-Revised : 04/18/2017
Revision No : 2

SILICA PRODUCTS

4. FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation persists.

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

INGESTION: Drink plenty of water. Consult a physician.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

EYES: Irritation, burning, redness, pain.

SKIN: Contact may cause skin irritation.

INGESTION: Not a likely route of entry.

INHALATION: May include shortness of breath, wheezing, coughing, and sputum production.

ACUTE EFFECTS: Overexposure to dust may aggravate respiratory conditions.

CHRONIC EFFECTS: Prolonged or repeated overexposure may cause lung damage.

NOTES TO PHYSICIAN: Not Applicable

5. FIRE FIGHTING MEASURES

GENERAL HAZARD: This product is noncombustible and will not ignite or contribute to the intensity of a fire.

EXTINGUISHING MEDIA: As appropriate for surrounding fire.

FIRE FIGHTING PROCEDURES: As appropriate for surrounding fire.

FIRE FIGHTING EQUIPMENT: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Vacuum or sweep up material and place in a disposal container. Avoid dust generation.

LARGE SPILL: Clean up using methods which avoid dust generation. Compressed air should not be used to clean up spills. Wear appropriate personal protective equipment. Collect material in a compatible and appropriately labeled container. Dispose of material from processing, installation, maintenance, or tear-out operations in accordance with applicable regulations.

ENVIRONMENTAL PRECAUTIONS

WATER SPILL: Dusts of as-manufactured refractory product have a low order of aquatic toxicity, are insoluble, and are not very mobile. Based upon this information, it is not believed to be a significant threat to the environment if accidentally released into water.

LAND SPILL: Dusts of as-manufactured refractory product are not believed to be a significant threat to the environment if accidentally released on land. Dust and material generated during maintenance and tear-out operations may be contaminated with other hazardous substances (e.g., metals, alkaline materials). Evaluation of dust and material from specific processes should be performed to determine if an environmental threat exists in the case of a release.

SAFETY DATA SHEET



Date Prepared : 07/20/2015
MSDS No : Silica Products
Date-Revised : 04/18/2017
Revision No : 2

SILICA PRODUCTS

AIR SPILL: Exhaust ventilation is recommended to maintain airborne dust concentrations below regulatory exposure levels. Consult individual operating permits for allowable air emissions.

GENERAL PROCEDURES: Not Applicable

SPECIAL PROTECTIVE EQUIPMENT: Personal Protective Equipment should be worn as indicated in Section 8.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Keep dry and avoid exposure to moisture prior to use.

HANDLING: Use proper procedures for installation and operation. Contact manufacturer for proper procedures. Practice good housekeeping to minimize dust generation. Respirators should be worn during installation and removal of product if dust could be generated. Consult Section 8 for respirator selection information.

STORAGE: Store in a dry area.

STORAGE TEMPERATURE: Not Applicable

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)

Chemical Name	EXPOSURE LIMITS			
	Type		ppm	mg/m ³
Silica, Crystalline quartz (non- respirable)	OSHA PEL	TWA	[1]	0.1 [1]
	ACGIH TLV	TWA	[2]	0.025 [2]
	Supplier OEL	TWA		NA

OSHA TABLE COMMENTS:

1.

OSHA has issued a proposed silica standard lowering the PEL to 0.05 mg/m³ for silica, crystalline quartz - respirable fraction. The proposed standard maintains the PEL for cristobalite at 0.05 mg/m³.

2. Silica exposure limits listed are for respirable fractions.

ENGINEERING CONTROLS: Local exhaust ventilation may be necessary to control any air contaminants to within their exposure limits during the use of this product.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Wear safety glasses with side shields (or goggles) and a face shield.

SKIN: Use rubber gloves. Wash thoroughly after handling.

RESPIRATORY: If it is not possible to reduce airborne exposure levels to below the exposure limits with ventilation, use the table below to assist you in selecting respirators that will reduce personal exposures to below the exposure limits.

The assigned protection factor (APF) is the minimum anticipated level of protection provided by each type of respirator worn in accordance with an adequate respiratory protection program. For example, an APF of 10 means that the

SAFETY DATA SHEET



Date Prepared : 07/20/2015
MSDS No : Silica Products
Date-Revised : 04/18/2017
Revision No : 2

SILICA PRODUCTS

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

Assigned Protection Factor	Type of Respirator
10	Any air-purifying elastomeric half-mask respirator equipped with appropriate type of particulate filter. Appropriate filtering facepiece respirator. Any air-purifying full facepiece respirator equipped with appropriate type of particulate filter. 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 facepiece respirator equipped with N-100, R-100, or P-100 filter(s). Any powered air-purifying respirator equipped with a tight-fitting facepiece (half or full facepiece) and a high-efficiency filter. Any negative pressure (demand) supplied-air respirator equipped with a full facepiece. Any continuous flow supplied-air respirator equipped with a tight-fitting facepiece (half or full facepiece). Any negative pressure (demand) self-contained respirator equipped with a full facepiece.
1000	Any pressure-demand supplied-air respirator equipped with a half-mask.

PROTECTIVE CLOTHING: Wear clothing which minimizes skin contact or exposure.

WORK HYGIENIC PRACTICES: Use good personal hygiene when handling this product. Wash hands after use, before smoking, or before using the toilet.

OTHER USE PRECAUTIONS: Recommend chest X-rays and yearly vital capacity tests for employees regularly exposed to silica for early detection of silicosis. Comply with all guidelines for crystalline silica exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Granular solid

ODOR: No Odor

APPEARANCE: Granular to fine material.

pH: Not Applicable

PERCENT VOLATILE: Not Applicable

FLASHPOINT AND METHOD: Not Applicable

FLAMMABLE LIMITS: Not Applicable

VAPOR PRESSURE: Not Applicable

SAFETY DATA SHEET



Date Prepared : 07/20/2015
MSDS No : Silica Products
Date-Revised : 04/18/2017
Revision No : 2

SILICA PRODUCTS

VAPOR DENSITY: Not Applicable
BOILING POINT: Not Applicable
FREEZING POINT: Not Applicable
MELTING POINT: Reference product literature.
SOLUBILITY IN WATER: < 3%
EVAPORATION RATE: Not Applicable
SPECIFIC GRAVITY: 2 to 3.000 g/cc

10. STABILITY AND REACTIVITY

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.
STABILITY: Stable.
CONDITIONS TO AVOID: Not Applicable
HAZARDOUS DECOMPOSITION PRODUCTS: Not Applicable
INCOMPATIBLE MATERIALS: Strong acids, bases, oxidizing agents.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

NOTES: Acute silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period.

US GHS Carcinogen Classification

IARC: The International Agency for Research on Cancer ("IARC") 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 and cristobalite". The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group I)". The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstance 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, Volume 68, "Silica, Some Silicates..." (1997). (Emphasis added).

NTP: Crystalline Silica (respirable) - NTP reports may reasonably be anticipated to be a carcinogen.

OSHA: Crystalline silica (quartz) is not regulated by the U.S. Occupational Safety and Health Administration as a carcinogen. There is substantial literature on the issues of the carcinogenicity of crystalline silica, which the reader should consult for additional information. A summary of the literature is set forth in "Exposure to crystalline silica and risk of lung cancer; the epidemiological evidence", Thorax, Volume 51, pp. 97-102 (1996). The official statement of the American Thoracic Society on the issue of silica carcinogenicity was published in "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997). The official statement concluded that "The available data support the conclusion that silicosis produces increased risk for bronchogenic carcinoma. The cancer risk may also be increased by smoking and other carcinogens in the workplace.

SAFETY DATA SHEET



Date Prepared : 07/20/2015
MSDS No : Silica Products
Date-Revised : 04/18/2017
Revision No : 2

SILICA PRODUCTS

Epidemiologic studies provide convincing evidence for increased cancer risk among tobacco smokers with silicosis. For workers with silicosis, the risks for lung cancer are relatively high and consistent among various countries and investigators. Silicosis should be considered a condition that predisposes workers to an increased risk of lung cancer". Id. at 763.

STOT-SINGLE EXPOSURE: SILICOSIS- caused by the inhalation and retention of respirable crystalline silica dust. Silicosis can exist in several forms, chronic (or ordinary), and accelerated (or acute). Chronic or Ordinary Silicosis is the most common form of silicosis, and can occur after many years of exposure to relatively low levels of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis. Simple Silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function, or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated Silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough, and sputum production.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: None Known

BIOACCUMULATION/ACCUMULATION: Not Applicable

DISTRIBUTION: Not Applicable

CHEMICAL FATE INFORMATION: Not Applicable

GENERAL COMMENTS: Dusts of as-manufactured refractory product have a low order of aquatic toxicity, are insoluble, and are not very mobile. Based upon this information, it is not believed to be a significant threat to the environment if accidentally released on land or into water. However, dust and material generated during maintenance and tear-out operations may be contaminated with other hazardous substances (e.g., metals, respirable crystalline silica, alkaline materials). Evaluation of dust and material from specific processes should be performed to determine if an environmental threat exists in the case of release.

13. DISPOSAL CONSIDERATIONS

PRODUCT DISPOSAL:

The as-manufactured refractory product or refractory dust is not considered a hazardous waste. Dust and material generated during use, maintenance and tear-out operations may be contaminated with other hazardous substances (e.g., metals, alkaline materials) from a particular application. Additionally, the spent refractory could contain reaction products not originally present in the supplied refractory material. Contaminants or reaction products have the potential to cause the refractory waste to exhibit hazardous waste characteristics. It is the responsibility of the user to consult applicable regulations prior to disposal of any industrial product to ensure waste disposal compliance. Waste analysis and characterization may be necessary to determine proper waste disposal. Waste Management: Dusts could contain respiratory hazards. To prevent waste materials becoming airborne during waste generation, storage, transportation, and disposal, proper dust control measures are recommended.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Not Regulated

SAFETY DATA SHEET



Date Prepared : 07/20/2015
MSDS No : Silica Products
Date-Revised : 04/18/2017
Revision No : 2

SILICA PRODUCTS

ROAD AND RAIL (ADR/RID)

PROPER SHIPPING NAME: Not Regulated for Transport

UN NUMBER: N/A

PACKING GROUP: N/A

SPECIAL PROVISIONS: Not Applicable

AIR (ICAO/IATA)

SHIPPING NAME: Not Regulated

PRIMARY HAZARD CLASS/DIVISION: Not Applicable

VESSEL (IMO/IMDG)

SHIPPING NAME: Not Regulated

MARINE POLLUTANT #1: Not Applicable

15. REGULATORY INFORMATION

UNITED STATES

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA STATUS: All ingredients in this mixture are in compliance with TSCA.

CALIFORNIA PROPOSITION 65: WARNING: This product contains crystalline silica, a chemical known to the State of California to cause cancer.

RCRA STATUS: Not regulated

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM): This product is a WHMIS controlled substance.

16. OTHER INFORMATION

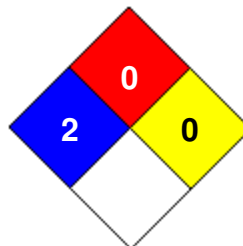
Date-Revised: 04/18/2017

REVISION SUMMARY: This MSDS replaces the 04/18/2017 MSDS.

HMIS RATING

HEALTH	*	2
FLAMMABILITY		0
PHYSICAL HAZARD		0
PERSONAL PROTECTION		

NFPA CODES



DISCLAIMER: All information provided here is based on data believed to be reliable. However, THE INFORMATION AND THE PRODUCT ARE PROVIDED WITHOUT ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO REPRESENTATIONS AND WARRANTIES REGARDING

SAFETY DATA SHEET



Date Prepared : 07/20/2015

MSDS No : Silica Products

Date-Revised : 04/18/2017

Revision No : 2

SILICA PRODUCTS

ACCURACY OR CORRECTNESS, THE EFFECTS OF USING THE PRODUCT, THE RESULTS TO BE OBTAINED, FITNESS FOR A PARTICULAR PURPOSE, OR THE SAFETY OR TOXICITY OF THE PRODUCT. It is the users' responsibility to determine the safety, toxicity, and suitability for their use of the product and to comply with all applicable statutes and regulations. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control. For this and other reasons, Allied Mineral Products, Inc. does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of, relating to, or in any way connected with the handling, storage, use, or disposal of this product. This SDS is not intended as a license to operate under, or a recommendation to infringe on, any patents. Appropriate warnings and safe handling instructions should be provided to handlers and users.