

1. Product and Company Information


Product Series	Spherix®
Product Use	Additive for use in rubber, plastics, composites, adhesives, coatings, and sealants
Product Type	Fine powder mineral additive
Manufacturer	Spherix Mineral Products 1618 Two Notch Road, Lexington, SC 29073 1-844-774-3749 / customersupport@spherixproducts.com

2. Hazards Identification

2.1 Classification of the substance

Health hazards	Skin irritation, Category 3 Eye irritation, Category 2B Specific Target Organ Toxicant, Single Exposure, Category 3
Specific hazards	Respirable particles may become airborne if agitated. Provide workplace air filtration engineering controls, capable of removing at least 99% of particulates. If action levels of airborne respirable silica may be exceeded over a 30-day period, use facemasks with an assigned protection factor of 50 and equipped with filter P-100 cartridges.
Main symptoms	Upper respiratory tract irritation Coughing Irritation of eyes and mucous membranes Skin irritation

2.2 Label Elements

Signal Word	Danger
Symbol	
Hazard Statements	Dust may cause respiratory irritation Repeated/prolonged exposure to dust inhalation may cause damage to lungs.

2.3 Precautionary Statements

Prevention	Avoid prolonged skin contact Avoid ingestion Avoid breathing dust Use respiratory protection
Response	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If eye irritation persists, get medical advice/attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER if you feel unwell. If skin irritation occurs, get medical advice/attention.
Storage	Store bags in dry, well-ventilated place. Keep container tightly closed. Store locked up
Disposal	NON-HAZARDOUS (EPA). Product does not constitute hazardous waste. Federal Register 21301-21501. April 17, 2015.

2.4 Human Health Hazards

Precautionary Statements	Avoid prolonged skin contact Avoid breathing substance Avoid ingestion Use respiratory protection Wash skin with soapy water.
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3. Composition Information

Ingredient Name	CAS Number	Wt. %	UN GHS (Rev 4) Classification
Aluminosilicate solid ceramic spheres	68131-74-8	95-99	Single Exposure STOT, hazard category 3
Silica, respirable	14808-60-7	0.2-1	Repeated exposure STOT, hazard Category 2
Components of solid ceramic spheres:			
Amorphous silicon dioxide	60676-86-0	40-55	Spheres: Single Exposure STOT, Category 3
Alumina	1344-28-1	25-35	
Iron oxide	1309-37-01	3-12	
Calcium oxide	1305-78-8	2-4	
Potassium oxide	12136-45-7	2-4	
Magnesium oxide	1309-48-4	1-2	
Titanium oxide	13463-67-7	0.1-4	
Crystalline silica	14808-60-7	0.1-2	

4. First Aid Measures

Inhalation	Remove person to fresh air. Dust in throat and nasal passage should clear spontaneously. Consult a physician if discomfort or difficulty breathing persists.
Eye Contact	Do not rub. Flush eyes with water for several minutes. Consult a physician if there is persistent irritation.
Skin Contact	No acute hazard is associated with short-term skin contact. Avoid prolonged skin contact. Periodic washing of skin with soap and water is recommended.
Ingestion	Rinse mouth with water; clear nose and throat. No specific first aid measures are required.
Most important health effects, both acute and delayed	Acute: irritated respiratory tract and eyes. Chronic effects: frequent inhalation of dust levels above permissible exposure limits (PEL) over a long period of time increases the risk of developing lung damage, including silicosis.
Indication of any immediate medical attention and special treatment needed	None on short term exposure to dust. Get medical attention if inhalation is severe/prolonged and respiratory symptoms persist after immediate first aid measures are given.

5. Fire-Fighting Measures

Suitable extinguishing media	Product is noncombustible. Use extinguishing media for surrounding materials.
Extinguishing media which should not be used	No restriction
Special exposure hazards	No unusual fire or explosion hazards noted. No anticipated thermal decomposition products.
Special protective equipment for fire fighters	Wear dust mask.

6. Accidental Release Measures

Personal precautions	No action shall be taken involving any personal risk or without suitable training. Don appropriate personal protective equipment. If ventilation is inadequate, utilize appropriate respiratory protection. Avoid airborne dust generation.
Environmental precautions	Spherix® does NOT CONSTITUTE HAZARDOUS WASTE.
Methods of cleaning up	Do not dry sweep. Do not use compressed air. Water spray or HEPA equipped vacuum is recommended for removing spilled material. Minimize generation of airborne dust during cleanup activities.

7. Handling and Safe Storage

Handling

Advice on safe handling	No special precautions, except for controlling dust. Dust masks equipped with N-100 HEPA filters are advised. Periodically vacuum (HEPA filter) accumulated dust on walls, floors, sills, ledges, machinery, or equipment. Keep airborne dust concentrations below PEL.
Technical measures and storage	Adequate exhaust ventilation should be operational in closed places where airborne dust is generated. Keep containers closed.

Storage

Technical measures and storage	Containers need to be protected from physical damage that could lead to spillage and airborne dust generation.
Packaging Materials	Keep containers closed and store bags to avoid accidental tearing, breaking, or bursting. Packaging bags can be disposed of as ordinary refuse in any sanitary landfill or by incineration.

8. Exposure Controls/Personal Protection

Ingredient Name	OSHA PEL	ACGIH TLV	NIOSH REL
Respirable silica (quartz)	0.05 mg/m ³ 8-Hr. TWA Action level: 0.025 mg/m ³ 8 Hr. TWA 30 or more days per year.	0.1 mg/m ³ (respirable dust)	0.05 mg/m ³ 10 Hr. TWA (respirable dust)
Biological Limit Values	There are no ACGIH Biological Exposure Indices (BEI®) for Spherix® solid aluminosilicate spheres.		
DNEL/NMEL Values	Not Available		
PNEC Values	Not Available		
General Exposure Controls	Provide ventilation to maintain the ambient workplace atmosphere below the occupational exposure limit(s). Use general and local exhaust ventilation and dust collection systems as necessary to minimize exposure.		
Respiratory Protection	Where the level of exposure to dust exceeds the action level for crystalline silica, NIOSH-certified HEPA respirator equipped with N-100 cartridges is recommended. See Section 7.		
Eye Protection	Safety glasses or goggles are recommended.		
Skin Protection	Wear gloves and work clothing that minimizes skin contact.		
Environmental Exposure Controls	Contain spills and prevent wind dispersal. Follow state regulations for disposal, water emissions, and air emissions.		

9. Physical and Chemical Properties
Appearance

Physical State	Solid (powder)
Color	Beige (dry powder state)
Odor	No odor

Properties

Flash point	Noncombustible	Vapor pressure	Zero
Explosion limits		Odor threshold	n/a
Upper	Not available	Viscosity	n/a
Lower	Not available	Solubility (water)	Insoluble
pH (10% aqueous slurry)	6.5-7.5	Partition coefficient n-octanol/water	Resides in water phase
Melting point	Greater than 1600°F	Evaporation rate	Zero
Boiling point	Not available	Vapor density	n/a—no volatile components
Relative density	2.3-2.4		

10. Stability and Reactivity

Conditions to avoid	Prolonged agitation that generates dust
Materials to avoid	Strong acids, strong oxidizers
Chemical stability	Chemically stable in all conditions of normal use
Possible hazardous reactions	Material is a stable earthen mineral. Polymerization will not occur.
Hazardous decomposition products	Not known

11. Toxicological Information

General information	Spherix® as a mixture has not been evaluated for toxicological information. It is made of amorphous aluminosilicate mixed metal oxide ceramic formed during a high-temperature oxidation process which is then subjected to chemical surface treatment.
Special statement on crystalline silica	Without dust removal equipment, prolonged agitation of dry powder may generate airborne dust over an 8-hour time weighted average at action levels for respirable crystalline silica. Engineering controls and dust respirators recommended.
Skin contact	Dust may irritate skin on prolonged exposure.
Inhalation	Dust may irritate sinuses, and respiratory system. Chronic exposure above Occupational Exposure Limits increases the risk of developing lung disease.
Eye contact	Dust may irritate eyes.
Toxicological information for components (US NIOSH)	Note: Occupational exposure to silica and metal oxides within the solid ceramic spheres does not occur during normal use of Spherix®.
CMR effects (carcinogenicity, mutagenicity, and toxicity for reproduction)	Spherix® has not been tested for carcinogenicity, mutagenicity, or toxicity for reproduction. Although no studies are known about airborne chronic health effects, specifically associated with cancer, mutagenicity or toxicity for reproduction from exposure to solid ceramic spheres, the risks associated with any respirable, poorly soluble solids such as these are assumed to potentially apply.

12. Ecological Information

Ecotoxicity	No data at this time
Mobility	No data at this time

13. Disposal Considerations

Waste disposal	Cover material to prevent airborne dust and dispose of in a landfill according to state and local regulations for non-hazardous waste.
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14. Transportation

DOT Shipping Name	Not regulated
DOT Hazard Class	Not regulated
DOT Label(s)	Not regulated
UN/NA Number	Not regulated
Placards	Not regulated
IATA	Not regulated
Marine pollutant	Not listed

15. Regulatory Information
US Regulations

SARA 302 EHS	Neither Spherix® nor components of the solid ceramic spheres are on the EPCRA Extremely Hazardous Substances list (40 CFR 302).
SARA 311/312 Classification	Chronic
SARA 313 Supplier Notification	None
TSCA	Users are required to conform to air quality and personal protective equipment limits set forth herein.
California Proposition 65	The following substances are known to the State of California to be carcinogens and/or reproductive toxicants: silica, crystalline.

State Right to Know:

Component	CAS	MA _{1,2}	NJ _{3,4}	PA ₅	RI ₆
Calcium oxide	1305-78-8	Yes	Yes	Yes	No
Iron oxide	1309-37-1	Yes	Yes	Yes	No
Magnesium oxide	1309-48-4	No	Yes	No	No
Potassium oxide	12136-45-7	No	Yes	No	No
Silica-crystalline (SiO ₂), quartz	14808-60-78	Yes	Yes	Yes	No
Sodium Oxide	1313-59-3	No	Yes	No	No

1. Massachusetts Department of Public Health, no date
2. 189th General Court of The Commonwealth of Massachusetts, no date
3. New Jersey Department of Health and Senior Services, 2010a
4. New Jersey Department of Health, 2010b
5. Pennsylvania Code, 1986
6. Rhode Island Department of Labor and Training, no date

16. Other Information

Training instructions	Workers exposed to crystalline silica are required to obtain training to be in compliance with OSHA Final rules for silica (81 FR 16286-16890) published March 26, 2016, which are applicable to the safe handling and use of Spherix® products. Follow company training, housekeeping, air quality engineering controls, and use the proper personal protective equipment described above.
Data sources	ACGIH® (American Conference of Governmental Industrial Hygienists) New Jersey Right to Know Hazardous Substance Fact Sheets US OSHA, 29 CFR 1910, Tables Z-1, Z-2, Z-3 US Centers for Disease Control and Prevention, NIOSH Pocket Guide
Prepared by	Spherix Mineral Products
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