



SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
Canada Hazardous Products Regulations (SOR/2015-17)

Revision date 13-Mar-2023

Revision Number 3

1. Identification

Product identifier

Product Name Lumira™ Aerogel Particles

Other means of identification

Product Code(s) LA1000

Synonyms Modified Synthetic Amorphous Silica

Recommended use of the chemical and restrictions on use

Recommended use Various, Insulating material, Industrial Products, Absorbant

Restrictions on use None known.

Details of the supplier of the safety data sheet

Cabot Business & Technology Center 157 Concord Road Billerica, Massachusetts 01821 United States Tel: +1 978 663 3455 Fax: +1 978 663 5471	Cabot Corporation 4400 North Point Parkway Suite 200 Alpharetta, Georgia 30022 United States Tel: +1 678 297 1300 Fax: +1 678 297 1245
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Emergency telephone number

Emergency Telephone US: CHEMTREC : 1-800-424-9300 or +1-703-527-3887
International CHEMTREC: +1 703-741-5970 or +1-703-527-3887

2. Hazard(s) identification

Classification

This product is not considered hazardous by either the US 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200) or the Canadian Workplace Hazardous Material Information System (WHMIS 2015)

Label elements

Signal word
None

Hazard statements

Precautionary statements
None

Other information

Do not expose to temperatures above 300 °C. May cause mechanical irritation. Dust may be irritating to respiratory tract.

3. Composition/information on ingredients

Substance

Synonyms Modified Synthetic Amorphous Silica

Chemical name	CAS No	Weight-%	Hazardous Material Information Review Act registry number (HMIRA registry #)	Date HMIRA filed and date exemption granted (if applicable)
Silica, [(trimethylsilyl)oxy]-modified	102262-30-6	100	-	-

Additional information

The hyphen (-) means "not applicable"

4. First-aid measures

Description of first aid measures

Inhalation	If cough, shortness of breath or other breathing problems occur, move to fresh air. Seek medical attention if symptoms persist. If necessary, restore normal breathing through standard first aid measures.
Eye contact	In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.
Skin contact	Wash skin with soap and water. Get medical attention if symptoms occur.
Ingestion	Do NOT induce vomiting. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11 for additional Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Carbon dioxide (CO ₂). Foam. Dry chemical. Water.
Unsuitable extinguishing media	None.
Specific hazards arising from the chemical	May release formaldehyde when heated to high temperatures in the presence of air. Formaldehyde is a known skin and lung sensitizer and is regulated as a carcinogen.
Hazardous combustion products	Carbon monoxide, Carbon dioxide (CO ₂), Formaldehyde, Organic products of decomposition
Explosion data	
Sensitivity to mechanical impact	None.
Sensitivity to static discharge	This material will not create nor support conditions that would result in a dust explosion or fire. Take precautionary measures against static discharges. Avoid generation of dust. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is

electrically earthed/grounded before beginning transfer operations.

Special protective equipment and precautions for fire-fighters

In case of fire: Wear self-contained breathing apparatus. Use personal protection equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions

Avoid generation of dust. Ensure adequate ventilation. Use personal protection equipment. See section 8.

Environmental precautions

Environmental precautions

Contain spilled product on land, if possible. The product is insoluble and floats on water. Local authorities should be advised if significant spillages cannot be contained. See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for containment

Prevent further leakage or spillage if safe to do so.

Methods for cleaning up

Clean up promptly by vacuum. Use of a vacuum with high efficiency particulate air (HEPA) filtration is recommended. Do not create a dust cloud by using a brush or compressed air. Dry sweeping is not recommended. See section 13.

7. Handling and storage

Precautions for safe handling

Advice on safe handling

Avoid contact with skin and eyes. Avoid generation of dust. Do not breathe dust. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Do not create a dust cloud by using a brush or compressed air.

Take precautionary measures against static discharges. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations. Fine dust is capable of penetrating electrical equipment and may cause electrical shorts.

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep container tightly closed in a dry and well-ventilated place. Do not store together with volatile chemicals as they may be adsorbed onto product. Store at ambient conditions. Keep in properly labeled containers.

8. Exposure controls/personal protection

Control parameters

Exposure Limits

The table below is a summary. Please see the specific legislation for complete information.

Chemical name	Amorphous Silica 7631-86-9
OSHA PEL	(vacated) TWA: 6 mg/m ³
Chemical name	Dust, or particulates not otherwise specified RR-00072-6
ACGIH TLV	TWA: 10 mg/m ³ inhalable particles, recommended TWA: 3 mg/m ³ respirable particles, recommended

OSHA PEL	TWA: 15 mg/m ³ total dust; 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust; 5 mg/m ³ respirable fraction
Alberta	TWA: 10 mg/m ³ total; 3 mg/m ³ respirable
British Columbia	TWA: 10 mg/m ³ total dust; 3 mg/m ³ respirable fraction
Ontario	TWA: 10 mg/m ³ inhalable fraction; 3 mg/m ³ respirable fraction
Quebec	TWA: 10 mg/m ³ total dust

Other information In its facilities globally, Cabot Corporation manages silica to the Germany TRGS 900 occupational exposure limit of 4 mg/m³, TWA, Inhalable fraction.

Appropriate engineering controls

Engineering controls Ensure adequate ventilation to maintain exposures below occupational limits. Provide appropriate local exhaust ventilation at machinery and at places where dust can be generated. Ensure that eyewash stations and safety showers are close to the workstation location.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Hand protection Wear suitable gloves. Use protective barrier cream before handling the product.

Skin and body protection Wear suitable protective clothing. Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace.

Respiratory protection Approved respirator may be necessary if local exhaust ventilation is not adequate.

Environmental exposure controls In accordance with all local legislation and permit requirements as applicable for dusts.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Information given is based on data obtained from this substance or from similar substances

Information on basic physical and chemical properties

Physical state	Solid
Appearance	Powder
Color	white
Odor	None
Odor threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	3.0 - 6.5	In-house testing
Melting point / freezing point	1700 °C	after partial decomposition; NIOSH Pocket Guide to Chemical Hazards
Boiling point / boiling range	2230 °C	after partial decomposition; NIOSH Pocket Guide to Chemical Hazards
Flash point		Not applicable
Evaporation rate		Not applicable
Flammability (solid, gas)	Not flammable	Not readily combustible (Class 4.1) per UN Recommendations on the Transportation of Dangerous Goods test method
Flammability Limit in Air		Not applicable
Vapor pressure		Not applicable
Relative vapor density		Not applicable
Relative density		No data available
Water solubility		No data available
Solubility(ies)		No data available
Partition coefficient		Not applicable

Autoignition temperature	550 °C	ASTM D-1929
Decomposition temperature	> 300 °C	DSC
Kinematic viscosity		Not applicable
Dynamic viscosity		Not applicable
<u>Other information</u>		
Explosive properties		Non-explosible
Oxidizing properties		No Oxidizing properties
Bulk density	60-150 kg/m ³	@ 20 °C
VOC content	negligible	

10. Stability and reactivity

Reactivity	Not reactive.
Chemical stability	Stable under normal conditions. Stable under recommended storage conditions. Thermally decomposes above 300°C.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to avoid	Heating above 300°C leads to decomposition of Aerogel surface treatment. Decomposition vapor should be ventilated. May release formaldehyde when heated to high temperatures in the presence of air. Formaldehyde is a known skin and lung sensitizer and is regulated as a carcinogen.
Incompatible materials	None known based on information supplied
Hazardous decomposition products	Carbon monoxide, Carbon dioxide (CO ₂), Formaldehyde, Organic products of decomposition

11. Toxicological information

Information given is based on data obtained from this substance or from similar substances.

Acute toxicity

Oral LD50	> 5000 mg/kg (rat). No deaths occurred and no signs of toxicity were seen during the observation periods after single oral administration of the substance, OECD 423.
Dermal LD50	No data are available on the product itself
Inhalation LC50	Synthetic Amorphous Silica: > 2000 mg/kg (rabbit). Very slight transient erythema in one animal. No signs of systemic or organ toxicity (OECD 402). Due to the product's physical characteristics, no suitable testing procedure is available.
Skin corrosion/irritation	Primary irritation index = 0.0 @ 24 hr. Not classified as an irritant (OECD 404).
Serious eye damage/eye irritation	Not classified as an irritant in rabbit studies (OECD 405). High dust concentrations may cause mechanical irritation.
Respiratory or skin sensitization	Non-sensitizing. A delayed contact hypersensitivity study in guinea pigs utilizing the Buehler technique was performed.
Germ cell mutagenicity	Not mutagenic in AMES Test. Negative in the chromosome aberration test in Chinese hamster ovary (CHO) cells.
Carcinogenicity	No data are available on the product itself. Synthetic Amorphous Silica: No evidence of carcinogenicity was observed in multiple animal species

	following repeated oral or inhalation exposure to amorphous silica. Similarly, epidemiology studies show no evidence of carcinogenicity in workers who manufacture amorphous silica.
Reproductive toxicity	No effects on reproductive organs or fetal development have been reported in animal toxicity studies.
STOT - single exposure	Specific target organ toxicity is not expected after single oral, single inhalation, or single dermal exposure.
STOT - repeated exposure	No data are available on the product itself.
	Treated Synthetic Amorphous Silica: Repeated dose toxicity: oral (rat), 28-d, diet, no significant treatment-related adverse effects at the doses tested. Derived No Adverse Effects Level (NOAEL) in the range of 1000 mg/kg/d.
	Synthetic Amorphous Silica: Repeated dose toxicity: oral (rat), 2 weeks to 6 months, no significant treatment-related adverse effects at doses of up to 8% silica in the diet. Repeated dose toxicity: inhalation (rat), 13 weeks, Lowest Observed Effect Level (LOEL) = 1.3 mg/m ³ based on mild reversible effects in the lungs. Repeated dose toxicity: inhalation (rat), 90 days, LOEL = 1 mg/m ³ based on reversible effects in the lungs and effects in the nasal cavity. Repeated dose toxicity using SAS 400 m ² /g: inhalation (rat), 90 days, fully reversible inflammation related to clearance processes following recovery period. NOAEC (lung) based on histopathology and inflammatory marker is 5 mg/m ³
	Based on available data, a STOT-RE classification is not warranted.
Target organ effects	Lungs
Aspiration hazard	Based on industrial experience and available data, no aspiration hazard is expected.
Other adverse effects	No information available.

12. Ecological information

Information given is based on data obtained from this substance or from similar substances

Ecotoxicity	No data are available on the product itself.
	Synthetic Amorphous Silica: Fish (Brachydanio rerio) LC50 (96 h): > 10,000 mg/l; (Method: OECD 203). No acute toxicity to Daphnia with EL and EL ₅₀ ranging from >1000 to 10,000 mg/L (OECD 202).
Persistence and degradability	The methods for determining biodegradability are not applicable to inorganic substances.
Bioaccumulation	Not expected due to physicochemical properties of the substance.
Mobility	Not expected to migrate.
Other adverse effects	No information available.

13. Disposal considerations

Waste treatment methods

Waste from residues/unused products	Dispose of in accordance with federal, state and local regulations. Dispose of waste in accordance with environmental legislation.
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Contaminated packaging Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable.

14. Transport information

Note: Not self-heating solids (Class 4.2) per UN Transportation of Dangerous Goods

<u>DOT</u>	Not regulated
<u>TDG</u>	Not regulated
<u>MEX</u>	Not regulated
<u>ICAO (air)</u>	Not regulated
<u>IATA</u>	Not regulated
<u>IMDG</u>	Not regulated
<u>RID</u>	Not regulated
<u>ADR</u>	Not regulated
<u>ADN</u>	Not regulated

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

TSCA Complies

Chemical name	CAS No	US TSCA Inventory listing	US TSCA inactive/active designation
Silica, [(trimethylsilyl)oxy]-modified	102262-30-6	Present	Active

DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies
TCSI	Complies
NZIoC	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
 EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
 ENCS - Japan Existing and New Chemical Substances
 IECSC - China Inventory of Existing Chemical Substances
 KECL - Korean Existing and Evaluated Chemical Substances
 PICCS - Philippines Inventory of Chemicals and Chemical Substances
 AICS - Australian Inventory of Chemical Substances
 TCSI - Taiwan Chemical Substance Inventory
 NZIoC - New Zealand Inventory of Chemicals

US Federal RegulationsTSCA Section 12(b) Export Regulations

This product does not contain any components that are subject to TSCA 12(b) Export Notification.

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

Clean Air Act Amendments of 1990 (CAA, Section 112, 40 CFR 82)

This product does not contain any components listed as a Hazardous Air Pollutant, Flammable Substance, Toxic Substance, or Class 1 or 2 Ozone Depletor.

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

US State RegulationsCalifornia Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Amorphous Silica 7631-86-9	X	X	X

16. Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Key literature references and sources for data used to compile the SDS

NIOSH Pocket Guide to Chemical Hazards, September 2005. "Silica, amorphous". DHHS (NIOSH) Publication No. 2005-149. National Technical Information Service, Springfield, VA. p. 277

Prepared By Cabot Corporation - Safety, Health and Environmental Affairs.

Revision date 13-Mar-2023

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End of Safety Data Sheet