# SAFETY DATA SHEET

Version 8.6
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## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : Lithium modified Silica Nanoparticles, non-porous, 200 nm

Product Number : 915645
Brand : Aldrich

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

### 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

### 1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Skin irritation (Category 2), H315
Serious eye damage (Category 1), H318
Carcinogenicity (Category 1B), H350



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For the full text of the H-Statements mentioned in this Section, see Section 16.

### 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal Word Danger

Hazard Statements

| | |
|---|---|
| H315 | Causes skin irritation. |
| H318 | Causes serious eye damage. |
| H350 | May cause cancer. |

Precautionary Statements

| | |
|---|---|
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| P264 | Wash skin thoroughly after handling. |
| P280 | Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| P302 + P352 | IF ON SKIN: Wash with plenty of soap and water. |
| P305 + P351 + P338 + P310 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor. |
| P308 + P313 | IF exposed or concerned: Get medical advice/ attention. |
| P332 + P313 | If skin irritation occurs: Get medical advice/ attention. |
| P362 | Take off contaminated clothing and wash before reuse. |
| P405 | Store locked up. |
| P501 | Dispose of contents/ container to an approved waste disposal plant. |

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

| Component | | Classification | Concentration |
|---|---|---|---|
| **silicon dioxide** | | | |
| CAS-No.<br>EC-No.<br>Registration number | 7631-86-9<br>231-545-4<br>01-2119379499-16-XXXX | | >= 90 - <= 100 % |
| **1,3-propanesultone** | | | |
| CAS-No.<br>EC-No.<br>Index-No. | 1120-71-4<br>214-317-9<br>016-032-00-3 | Acute Tox. 3; Acute Tox. 4; Skin Irrit. 2; Eye Dam. 1; Carc. 1B; Aquatic Acute 3; H301, H312, H315, H318, H350, H402 | >= 1 - < 5 % |



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| | | | |
|---|---|---|---|
| **Lithium 2-methylpropan-2-olate** | | | |
| CAS-No.<br>EC-No. | 1907-33-1<br>217-611-5 | 1; Acute Tox. 4; Skin Corr. 1B; Eye Dam. 1; H251, H302, H314, H318 | >= 1 - < 5 % |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

**General advice**
Show this material safety data sheet to the doctor in attendance.

**If inhaled**
After inhalation: fresh air. Call in physician.

**In case of skin contact**
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

**In case of eye contact**
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

**If swallowed**
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

### 4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed
No data available

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media**
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media**
For this substance/mixture no limitations of extinguishing agents are given.

### 5.2 Special hazards arising from the substance or mixture
Carbon oxides
Sulfur oxides
Lithium oxides
silicon oxides
Not combustible.



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Ambient fire may liberate hazardous vapours.

### 5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### 5.4 Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

### 6.2 Environmental precautions

Do not let product enter drains.

### 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

### 6.4 Reference to other sections

For disposal see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

**Advice on safe handling**
Work under hood. Do not inhale substance/mixture.

**Hygiene measures**
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

**Storage conditions**
Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

**Storage class**
Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated



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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**Ingredients with workplace control parameters**

| Component | CAS-No. | Value | Control parameters | Basis |
|---|---|---|---|---|
| silicon dioxide | 7631-86-9 | TWA | 20Million particles per cubic foot | USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts |
| | | TWA | 80mg/m3 / %SiO2 | USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts |
| | | PEL | 0.05 mg/m3 | OSHA Specifically Regulated Chemicals/Carcinogens |
| | Remarks | OSHA specifically regulated carcinogen | | |
| | | TWA | 6 mg/m3 | USA. NIOSH Recommended Exposure Limits |
| | | PEL | 6 mg/m3 | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |

### 8.2 Exposure controls

**Appropriate engineering controls**
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

**Personal protective equipment**

**Eye/face protection**
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

**Skin protection**
Handle with impervious gloves.

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Splash contact
Material: Nitrile rubber



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Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

**Body Protection**
protective clothing

**Respiratory protection**
Recommended Filter type: Filter type P3
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

**Control of environmental exposure**
Do not let product enter drains.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| a) | Appearance | Form: solid |
| b) | Odor | No data available |
| c) | Odor Threshold | No data available |
| d) | pH | No data available |
| e) | Melting point/freezing point | No data available |
| f) | Initial boiling point and boiling range | No data available |
| g) | Flash point | No data available |
| h) | Evaporation rate | No data available |
| i) | Flammability (solid, gas) | No data available |
| j) | Upper/lower flammability or explosive limits | No data available |
| k) | Vapor pressure | No data available |
| l) | Vapor density | No data available |
| m) | Density | No data available |
| | Relative density | No data available |
| n) | Water solubility | No data available |
| o) | Partition coefficient: | No data available |



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| | | |
|---|---|---|
| | n-octanol/water | |
| p) | Autoignition temperature | The substance or mixture is not classified as self heating. |
| q) | Decomposition temperature | No data available |
| r) | Viscosity | No data available |
| s) | Explosive properties | Not classified as explosive. |
| t) | Oxidizing properties | none |

**9.2 Other safety information**
No data available

## SECTION 10: Stability and reactivity

**10.1 Reactivity**
No data available

**10.2 Chemical stability**
The product is chemically stable under standard ambient conditions (room temperature) .

**10.3 Possibility of hazardous reactions**
No data available

**10.4 Conditions to avoid**
no information available

**10.5 Incompatible materials**
Strong oxidizing agents

**10.6 Hazardous decomposition products**
In the event of fire: see section 5

## SECTION 11: Toxicological information

**11.1 Information on toxicological effects**

**Mixture**

**Acute toxicity**
Acute toxicity estimate Oral - 3,776 mg/kg
(Calculation method)
Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.
Symptoms: Possible symptoms:, mucosal irritations
Acute toxicity estimate Dermal - > 5,000 mg/kg
(Calculation method)

**Skin corrosion/irritation**
Remarks: Mixture causes skin irritation.



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**Serious eye damage/eye irritation**
Remarks: Mixture causes serious eye damage.

**Respiratory or skin sensitization**
No data available

**Germ cell mutagenicity**
No data available

**Carcinogenicity**
Possible carcinogen.

IARC: 2A - Group 2A: Probably carcinogenic to humans (1,3-propanesultone)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: OSHA specifically regulated carcinogen (silicon dioxide)

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

## 11.2 Additional Information

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Components**

**silicon dioxide**

**Acute toxicity**
LD50 Oral - Rat - male and female - > 5,000 mg/kg
(OECD Test Guideline 401)
LC50 Inhalation - Rat - male and female - 4 h - > 5.01 mg/l - aerosol
(OECD Test Guideline 436)
LD50 Dermal - Rabbit - > 5,000 mg/kg
Remarks: (ECHA)
No data available

**Skin corrosion/irritation**
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: No eye irritation - 24 h
(OECD Test Guideline 405)

**Respiratory or skin sensitization**
in vivo assay - Guinea pig



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Result: Not a skin sensitizer.
(OECD Test Guideline 406)

**Germ cell mutagenicity**
Test Type: Ames test
Test system: Salmonella typhimurium
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary cells
Result: negative
Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Result: negative
Species: Rat - male
Result: negative
Remarks: (ECHA)

**Carcinogenicity**
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

**1,3-propanesultone**

**Acute toxicity**
LD50 Oral - Rat - > 100 - < 200 mg/kg
(OECD Test Guideline 401)
Inhalation: No data available
Dermal: No data available
No data available

**Skin corrosion/irritation**
Skin - Guinea pig
Result: Skin irritation
Remarks: (ECHA)

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: Irreversible effects on the eye
Remarks: (ECHA)

**Respiratory or skin sensitization**
Maximization Test - Guinea pig



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Result: negative
(OECD Test Guideline 406)

**Germ cell mutagenicity**
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster lung cells
Result: positive
Test Type: Ames test
Test system: Salmonella typhimurium
Result: positive
Method: OECD Test Guideline 474
Species: Mouse - male
Result: positive

**Carcinogenicity**
Presumed to have carcinogenic potential for humans
This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.
Possible human carcinogen

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

### Lithium 2-methylpropan-2-olate

**Acute toxicity**
LD50 Oral - Mouse - 1,682 mg/kg
Remarks: Behavioral:Somnolence (general depressed activity).
Respiratory disorder
Inhalation: No data available
Dermal: No data available

**Skin corrosion/irritation**
Remarks: No data available

**Serious eye damage/eye irritation**
Remarks: No data available

**Respiratory or skin sensitization**
No data available

**Germ cell mutagenicity**
No data available

**Carcinogenicity**
No data available



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**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

## SECTION 12: Ecological information

### 12.1 Toxicity

**Mixture**
No data available

### 12.2 Persistence and degradability
No data available

### 12.3 Bioaccumulative potential
No data available

### 12.4 Mobility in soil
No data available

### 12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Endocrine disrupting properties
No data available

### 12.7 Other adverse effects
No data available

**Components**

**silicon dioxide**

| | |
|---|---|
| Toxicity to fish | static test LC50 - Pimephales promelas (fathead minnow) - > 5,000 mg/l - 96 h<br>(OECD Test Guideline 203) |
| Toxicity to daphnia and other aquatic invertebrates | static test EC50 - Daphnia magna (Water flea) - > 5,000 mg/l<br>(OECD Test Guideline 202) |
| Toxicity to algae | static test ErC50 - Desmodesmus subspicatus (green algae) - > 173.1 mg/l<br>(OECD Test Guideline 201) |
| Toxicity to bacteria | static test EC50 - activated sludge - > 1,000 mg/l - 3 h<br>(OECD Test Guideline 209) |
| Toxicity to daphnia and other aquatic | semi-static test NOEC - Daphnia magna (Water flea) - 68 mg/l<br>(OECD Test Guideline 211) |



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| | |
|---|---|
| invertebrates(Chronic toxicity) | |

**1,3-propanesultone**

| | |
|---|---|
| Toxicity to fish | static test LC50 - Leuciscus idus (Golden orfe) - 72.5 mg/l - 96 h<br>(OECD Test Guideline 203) |
| Toxicity to daphnia and other aquatic invertebrates | semi-static test EC50 - Daphnia magna (Water flea) - 16 mg/l - 48 h<br>(OECD Test Guideline 202) |
| Toxicity to algae | static test ErC50 - Desmodesmus subspicatus (green algae) - > 320 mg/l - 72 h<br>(OECD Test Guideline 201) |
| Toxicity to bacteria | static test EC50 - Pseudomonas putida - ca. 26 mg/l - 17 h<br>(DIN 38421 TEIL 8) |

**Lithium 2-methylpropan-2-olate**

No data available

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

**Product**
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

## SECTION 14: Transport information

**DOT (US)**
Not dangerous goods

**IMDG**
Not dangerous goods

**IATA**
Not dangerous goods

**Further information**
Not classified as dangerous in the meaning of transport regulations.



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## SECTION 15: Regulatory information

### CERCLA Reportable Quantity

| Components | CAS-No. | Component RQ (lbs) | Calculated product RQ (lbs) |
|---|---|---|---|
| 1,3-propanesultone | 1120-71-4 | 10 | 400 |

### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

### SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

| | | |
|---|---|---|
| 1,3-propanesultone | 1120-71-4 | >= 1 - < 5 % |

### US State Regulations

**Massachusetts Right To Know**

silicon dioxide 7631-86-9

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**California Prop. 65**

WARNING: This product can expose you to chemicals including 1,3-propanesultone, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

**The ingredients of this product are reported in the following inventories:**

TSCA : All substances listed as active on the TSCA inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.



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## SECTION 16: Other information

### Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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