SAFETY DATA SHEET

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

1.1. Product identifier
Name of the substance: Lithium orthosilicate (Li4SiO4)
Identification number: 236-634-1 (EC number)
Registration number: None.
Document number: 2MJ
Synonyms: None.
Materion Code: 2MJ
Issue date: 13-March-2020
Revision date: 23-March-2020

1.3. Details of the supplier of the safety data sheet
Supplier
Company name: Materion Advanced Chemicals Inc.
Address: 407 N. 13th Street
1316 W. St. Paul Avenue
Milwaukee, WI 53233
United States
Division: Milwaukee
Telephone: 414.212.0257
e-mail: advancedmaterials@materion.com
Contact person: Laura Hamilton

1.4. Emergency telephone number
Supersedes date: 13-March-2020
Version number: 02

1.2. Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Not available.
Uses advised against: None known.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 as amended
Hazard summary: Causes eye irritation. Causes skin irritation. May cause respiratory irritation.

2.2. Label elements
Label according to Regulation (EC) No. 1272/2008 as amended
Contains: Lithium orthosilicate (Li4SiO4)

Hazard pictograms

Signal word: Warning
Hazard statements
H315: May cause respiratory irritation.
H320: Causes skin irritation.

Precautionary statements
Prevention
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P261: Avoid breathing dust/fume/mist/spray.
Response
### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

**Classification:** Skin Irrit. 2; H315

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>%</th>
<th>CAS-No. / EC No.</th>
<th>REACH Registration No.</th>
<th>Index No.</th>
<th>Notes</th>
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<td>Lithium orthosilicate (Li4SiO4)</td>
<td>100</td>
<td>13453-84-4</td>
<td></td>
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<td></td>
<td>236-634-1</td>
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**List of abbreviations and symbols that may be used above**

# This substance has been assigned Union workplace exposure limit(s).

- M: M-factor
- PBT: persistent, bioaccumulative and toxic substance.
- vPvB: very persistent and very bioaccumulative substance.

*All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.*

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

**Inhalation**
Move into fresh air and keep at rest. Call a physician if symptoms develop or persist.

**Skin contact**
Wash off with soap and water. Get medical attention if irritation develops and persists.

**Eye contact**
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention if irritation develops and persists.

**Ingestion**
Rinse mouth. Give one or two glasses or water if patient is alert and able to swallow. Seek immediate medical attention. Do not induce vomiting.

#### 4.2. Most important symptoms and effects, both acute and delayed

 Exposure may cause temporary irritation, redness, or discomfort.

#### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

### SECTION 5: Firefighting measures

#### General fire hazards

No unusual fire or explosion hazards noted.

#### 5.1. Extinguishing media

**Suitable extinguishing media**
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

**Unsuitable extinguishing media**
Do not use water jet as an extinguisher, as this will spread the fire.

#### 5.2. Special hazards arising from the substance or mixture

During fire, gases hazardous to health may be formed.

#### 5.3. Advice for firefighters

**Special protective equipment for firefighters**
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special firefighting procedures
No specific precautions.
Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
For non-emergency personnel
Keep unnecessary personnel away.
For emergency responders
Wear appropriate protective equipment and clothing during clean-up.

6.2. Environmental precautions
Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up
Prevent entry into waterways, sewer, basements or confined areas.

6.4. Reference to other sections
Not available.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid contact with eyes, skin, and clothing. Avoid generating excess dust. Provide good ventilation. Wear protective gloves/protective clothing/eye protection/face protection. Do not eat, drink or smoke when using the product.

7.2. Conditions for safe storage, including any incompatibilities
Store in tightly closed container.

7.3. Specific end use(s)
Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Occupational exposure limits


<table>
<thead>
<tr>
<th>Material Type</th>
<th>Value</th>
<th>Form</th>
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<tr>
<td>Lithium orthosilicate (Li4SiO4) (CAS 13453-84-4)</td>
<td>Ceiling 0,02 mg/m3</td>
<td>Inhalable dust.</td>
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Biological limit values
No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures
Follow standard monitoring procedures.

Derived no effect levels (DNELs)
Not available.

Predicted no effect concentrations (PNECs)
Not available.

8.2. Exposure controls
Appropriate engineering controls
Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment
General information
Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

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

Skin protection
- Hand protection
Wear appropriate chemical resistant gloves.
- Other
Wear suitable protective clothing.

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

Hygiene measures
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
Environmental exposure controls  Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance
- Physical state: Solid.
- Form: Solid.
- Colour: Not available.

Odour
- Odour: Not available.
- Odour threshold: Not available.

Melting point/freezing point
- Melting point/freezing point: 1256 °C (2292.8 °F)

Initial boiling point and boiling range
- Initial boiling point and boiling range: Not available.

Flash point
- Flash point: Not available.

Evaporation rate
- Evaporation rate: Not available.

Flammability (solid, gas)
- Flammability (solid, gas): Not available.

Upper/lower flammability or explosive limits
- Flammability limit - lower (%): Not available.
- Flammability limit - upper (%): Not available.

Vapour pressure
- Vapour pressure: Not available.

Vapour density
- Vapour density: Not available.

Relative density
- Relative density: Not available.

Solubility(ies)
- Solubility (water): Not available.

Partition coefficient (n-octanol/water)
- Partition coefficient (n-octanol/water): Not available.

Auto-ignition temperature
- Auto-ignition temperature: Not available.

Decomposition temperature
- Decomposition temperature: Not available.

Viscosity
- Viscosity: Not available.

Explosive properties
- Explosive properties: Not explosive.

Oxidising properties
- Oxidising properties: Not oxidising.

9.2. Other information

- Molecular formula: Li₄SiO₄
- Molecular weight: 119.84 g/mol

SECTION 10: Stability and reactivity

10.1. Reactivity
- The product is stable and non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
- Material is stable under normal conditions.

10.3. Possibility of hazardous reactions
- No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid
- Contact with incompatible materials.

10.5. Incompatible materials
- Reducing Agents.

10.6. Hazardous decomposition products
- Irritating and/or toxic fumes and gases may be emitted upon the product's decomposition.

SECTION 11: Toxicological information

General information
- Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure
- Inhalation: Prolonged inhalation may be harmful.
- Skin contact: No adverse effects due to skin contact are expected.
- Eye contact: Direct contact with eyes may cause temporary irritation.
Ingestion

May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms

Exposure may cause temporary irritation, redness, or discomfort.

11.1. Information on toxicological effects

**Acute toxicity**
Not known.

**Skin corrosion/irritation**
Due to partial or complete lack of data the classification is not possible.

**Serious eye damage/eye irritation**
Due to partial or complete lack of data the classification is not possible.

**Respiratory sensitisation**
Due to partial or complete lack of data the classification is not possible.

**Skin sensitisation**
Due to partial or complete lack of data the classification is not possible.

**Germ cell mutagenicity**
Due to partial or complete lack of data the classification is not possible.

**Carcinogenicity**
Due to partial or complete lack of data the classification is not possible.

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

**Reproductive toxicity**
Due to partial or complete lack of data the classification is not possible.

**Specific target organ toxicity**
- single exposure
Due to partial or complete lack of data the classification is not possible.

- repeated exposure
Due to partial or complete lack of data the classification is not possible.

**Aspiration hazard**
No information available.

**Mixture versus substance information**
Not available.

**Other information**
Not available.

SECTION 12: Ecological information

12.1. Toxicity
Due to partial or complete lack of data the classification for hazardous to the aquatic environment, is not possible.

12.2. Persistence and degradability
No data available.

12.3. Bioaccumulative potential
No data available.

**Partition coefficient n-octanol/water (log Kow)**
Not available.

**Bioconcentration factor (BCF)**
Not available.

12.4. Mobility in soil
No data available.

12.5. Results of PBT and vPvB assessment
Not a PBT or vPvB substance or mixture.

12.6. Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

**Residual waste**
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging**
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

**EU waste code**
The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Disposal methods/information**
Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

**Special precautions**
Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

**ADR**
14.1. - 14.6.: Not regulated as dangerous goods.
SECTION 15: Regulatory information

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

EU regulations

- Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended
  Not listed.
  Not listed.
- Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended
  Not listed.
- Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended
  Not listed.
- Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended
  Not listed.
- Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended
  Not listed.
  Not listed.
- Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA
  Not listed.

Authorisations

- Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended
  Not listed.

Restrictions on use

- Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended
  Not listed.
- Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.
  Not listed.

Other EU regulations

- Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended
  Not listed.

Other regulations

The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

National regulations

Follow national regulation for work with chemical agents in accordance with Directive 98/24/EC, as amended.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

Not available.

References

Not available.

Training information

Follow training instructions when handling this material.
Materion Advanced Chemicals Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. This document has been prepared using data from sources considered to be technically reliable and the information is believed to be correct. Materion makes no warranties, expressed or implied, as to the accuracy of the information contained herein. Materion cannot anticipate all conditions under which this information and its products may be used and the actual conditions of use are beyond its control. The user is responsible to evaluate all available information when using this product for any particular use and to comply with all Federal, State, Provincial and Local laws, statutes and regulations.