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

1.1. Product identifier
Product form: Substance
Physical state: Solid
Substance name: OLIVINE
Product code: SIO6715.9
Formula: Mg2Fe2SiO4
Synonyms: (Mg-FORSTERITE, Fe-FAYALITE)2 SiO4
Chemical family: INORGANIC SILICATE

1.2. Relevant identified uses of the substance or mixture and uses advised against
Use of the substance/mixture: Chemical intermediate
For research and industrial use only

1.3. Details of the supplier of the safety data sheet
GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

1.4. Emergency telephone number
Emergency number: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
GHS-US classification
Not classified

2.2. Label elements
GHS-US labeling
No labeling applicable

2.3. Other hazards
No additional information available

2.4. Unknown acute toxicity (GHS US)
No data available

SECTION 3: Composition/Information on ingredients

3.1. Substance
Substance type: Multi-constituent
Name: OLIVINE
CAS No: 19086-72-7

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olivine</td>
<td>(CAS No) 19086-72-7</td>
<td>97 - 100</td>
<td>Not classified</td>
</tr>
<tr>
<td>Quartz</td>
<td>(CAS No) 14808-60-7</td>
<td>0 - 0.01</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures
First-aid measures general: Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.
First-aid measures after skin contact: Wash with plenty of soap and water. Get medical advice/attention.
First-aid measures after eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.
First-aid measures after ingestion: Never give anything by mouth to an unconscious person. Get medical advice/attention.

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

| Symptoms/injuries after inhalation | May cause irritation to the respiratory tract. |
| Symptoms/injuries after skin contact | May cause skin irritation. |
| Symptoms/injuries after eye contact | May cause eye irritation. |
| Symptoms/injuries after ingestion | No information available. |
| Chronic symptoms | Long-term excessive exposure may cause talcosis, a pulmonary fibrosis, which in turn may lead to severe and permanent damage to lungs. This product contains small amounts of crystalline silica which causes silicosis. IARC found sufficient evidence in humans of carcinogenicity of inhaled crystalline silica in the form of quartz or cristobalite. |

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

No additional information available

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

| Suitable extinguishing media | Not combustible. |
| Unsuitable extinguishing media | None known. |

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

| Fire hazard | None known. |

#### 5.3. Advice for firefighters

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Avoid contact with skin and eyes. Do not breathe dust.

### SECTION 6: Accidental release measures

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

**6.1.1. For non-emergency personnel**

Protective equipment: Wear protective equipment as described in Section 8. Emergency procedures: Evacuate unnecessary personnel.

**6.1.2. For emergency responders**

Protective equipment: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

#### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.

#### 6.3. Methods and material for containment and cleaning up

For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up: Sweep or shovel spills into appropriate container for disposal.

#### 6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling: Avoid contact with skin and eyes. Do not breathe dust. Avoid dust formation. Provide local exhaust or general room ventilation to minimize exposure to dust.

Hygiene measures: Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

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

| Storage conditions | Keep container tightly closed. |
| Incompatible materials | None known. |
| Storage area | Store in a well-ventilated place. |

#### 7.3. Specific end use(s)

No additional information available

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters
### OLIVINE Safety Data Sheet

#### Olivine (19086-72-7)

<table>
<thead>
<tr>
<th></th>
<th>USA ACGIH</th>
<th>USA OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH TWA (mg/m³)</td>
<td>3 mg/m³ PNOC</td>
<td>10 mg/m³ PNOC</td>
</tr>
</tbody>
</table>

### Quartz (14808-60-7)

<table>
<thead>
<tr>
<th></th>
<th>USA ACGIH</th>
<th>USA OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH TWA (mg/m³)</td>
<td>0.1 mg/m³ respirable dust</td>
<td>15 mg/m³ nuisance dust</td>
</tr>
</tbody>
</table>

#### 8.2. Exposure controls

- **Appropriate engineering controls**: Provide local exhaust or general room ventilation.
- **Personal protective equipment**: Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
- **Hand protection**: Neoprene or nitrile rubber gloves.
- **Eye protection**: Safety glasses. Contact lenses should not be worn.
- **Skin and body protection**: Wear suitable protective clothing.
- **Respiratory protection**: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified dust and mist (orange cartridge) respirator.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

- **Physical state**: Solid
- **Appearance**: Powder.
- **Color**: Yellowish-green.
- **Odor**: No data available
- **Odor threshold**: No data available
- **Refractive index**: 1.63
- **pH**: No data available
- **Relative evaporation rate (butyl acetate=1)**: No data available
- **Melting point**: 2800 - 3200 °C
- **Freezing point**: No data available
- **Boiling point**: No data available
- **Flash point**: No data available
- **Auto-ignition temperature**: No data available
- **Decomposition temperature**: No data available
- **Flammability (solid, gas)**: Not combustible
- **Vapor pressure**: < 0.01 mm Hg @ 20°C
- **Relative vapor density at 20 °C**: No data available
- **Relative density**: 3.32
- **Specific gravity / density**: Median Particle Size: <400 um
- **VOC content**: 100 %
- **Solubility**: Insoluble in water.
- **Log Pow**: No data available
- **Log Kow**: No data available
- **Viscosity, kinematic**: No data available
- **Viscosity, dynamic**: No data available
- **Explosive properties**: No data available
- **Oxidizing properties**: No data available
- **Explosion limits**: No data available

#### 9.2. Other information

No additional information available

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

No additional information available

#### 10.2. Chemical stability

Stable.
### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Effect</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>Not classified</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Symptoms/injuries after inhalation</td>
<td>May cause irritation to the respiratory tract.</td>
</tr>
<tr>
<td>Symptoms/injuries after skin contact</td>
<td>May cause skin irritation.</td>
</tr>
<tr>
<td>Symptoms/injuries after eye contact</td>
<td>May cause eye irritation.</td>
</tr>
<tr>
<td>Symptoms/injuries after ingestion</td>
<td>No information available.</td>
</tr>
<tr>
<td>Chronic symptoms</td>
<td>Long-term excessive exposure may cause talcosis, a pulmonary fibrosis, which in turn may lead to severe and permanent damage to lungs. This product contains small amounts of crystalline silica which causes silicosis. IARC found sufficient evidence in humans of carcinogenicity of inhaled crystalline silica in the form of quartz or cristobalite.</td>
</tr>
</tbody>
</table>

#### 12. Ecological information

#### 12.1. Toxicity

No additional information available

#### 12.2. Persistence and degradability

No additional information available

#### 12.3. Bioaccumulative potential

No additional information available

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

Effect on ozone layer : No additional information available

Effect on the global warming : No known ecological damage caused by this product.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewage disposal recommendations</td>
<td>Do not dispose of waste into sewer.</td>
</tr>
<tr>
<td>Waste disposal recommendations</td>
<td>This product is a naturally occurring mineral. Unless contaminated in service, this product is neutral to the environment. Landfill. Dispose in a safe manner in accordance with local/national regulations.</td>
</tr>
<tr>
<td>Ecology - waste materials</td>
<td>Avoid release to the environment.</td>
</tr>
</tbody>
</table>

### SECTION 14: Transport information

#### 14.1. UN number

Not regulated for transport.
### 14.3. Additional information

**Other information:** No supplementary information available.

### Transport by sea

No additional information available

### Air transport

No additional information available

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

**OLIVINE (19086-72-7)**

- TSCA Exemption/Exclusion: Exempt-Naturally Occurring Substances in accordance with 40 CFR 710.4(b)

**Quartz (14808-60-7)**

- Not listed on the United States TSCA (Toxic Substances Control Act) inventory

#### 15.2. International regulations

**OLIVINE (19086-72-7)**

- Listed on INSQ (Mexican national Inventory of Chemical Substances)

**Quartz (14808-60-7)**

- Listed on the AICS (Australian Inventory of Chemical Substances)
- Listed on the Canadian DSL (Domestic Substances List)
- Listed on NZIoC (New Zealand Inventory of Chemicals)
- Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
- Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
- Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

#### 15.3. US State regulations

**OLIVINE (19086-72-7)**

- U.S. - California - Proposition 65 - Carcinogens List: No
- U.S. - California - Proposition 65 - Developmental Toxicity: No
- U.S. - California - Proposition 65 - Reproductive Toxicity - Female: No
- U.S. - California - Proposition 65 - Reproductive Toxicity - Male: No

**Quartz (14808-60-7)**

- U.S. - California - Proposition 65 - Carcinogens List
- U.S. - California - Proposition 65 - Developmental Toxicity
- U.S. - California - Proposition 65 - Reproductive Toxicity - Female
- U.S. - California - Proposition 65 - Reproductive Toxicity - Male

Non-significant risk level (NSRL)

- No
- No
- No
- No

### Table

<table>
<thead>
<tr>
<th>Substance</th>
<th>Carcinogens List</th>
<th>Developmental Toxicity</th>
<th>Reproductive Toxicity - Female</th>
<th>Reproductive Toxicity - Male</th>
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</thead>
<tbody>
<tr>
<td>OLIVINE (19086-72-7)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Quartz (14808-60-7)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
SECTION 16: Other information

Abbreviations and acronyms

Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development.

HMIS III Rating

Health: 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability: 0 Minimal Hazard
Physical: 0 Minimal Hazard

Prepared by safety and environmental affairs.

Date of issue: 01/29/2016 Version: 1.0

SDS US (GHS HazCom 2012) - Custom

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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