# MATERIAL SAFETY DATA SHEET (MSDS)

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**TOSOH Silica Glass Materials**

**TORO CORPORATION**

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**MSDS No. R1720000000 EX**

**The date of preparation** February 18, 2008

**Revised date** March 31, 2010

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## 1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND THE SUPPLIER

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>TOSOH Silica Glass Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products (&amp; Grades) Name</td>
<td></td>
</tr>
<tr>
<td>Clear Silica Glass (ES, ED, S, N, NP, HR, HRP)</td>
<td></td>
</tr>
<tr>
<td>Opaque Silica Glass (OP-1, OP-3, OP-3HD)</td>
<td></td>
</tr>
<tr>
<td>Silica Glass Wool</td>
<td></td>
</tr>
<tr>
<td>Granular Silica Glass for Coating</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>TOSOH CORPORATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>3-8-2, SHIBA, MINATO-KU, TOKYO 105-8623, JAPAN</td>
</tr>
<tr>
<td>Department in charge</td>
<td>Environment, Safety and Quality Control Department of Head Office</td>
</tr>
<tr>
<td>Filled by (person in charge)</td>
<td>Director of Environment, Safety and Quality Control Department</td>
</tr>
<tr>
<td>Telephone</td>
<td>+81-3-5427-5127</td>
</tr>
<tr>
<td>Facsimile</td>
<td>+81-3-5427-5203</td>
</tr>
</tbody>
</table>

### Emergency Contact

Environment, Safety, and Quality Control Department

TOSOH SGM CORPORATION

4555, KAISEI-CHO, SHUNAN, YAMAGUCHI 746-0006, JAPAN


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**Recommended use and restrictions on use**

General industrial products

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## 2. HAZARD IDENTIFICATION

### GHS classification

<table>
<thead>
<tr>
<th>Explosives:</th>
<th>No classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable gases:</td>
<td>No classification</td>
</tr>
<tr>
<td>Flammable aerosols:</td>
<td>No classification</td>
</tr>
<tr>
<td>Oxidizing gases:</td>
<td>No classification</td>
</tr>
<tr>
<td>Compressed Gases:</td>
<td>No classification</td>
</tr>
<tr>
<td>Flammable liquids:</td>
<td>No classification</td>
</tr>
<tr>
<td>Flammable solids:</td>
<td>Not classified</td>
</tr>
<tr>
<td>Self-reactive substances and mixtures:</td>
<td>No classification</td>
</tr>
<tr>
<td>Pyrophoric liquids:</td>
<td>No classification</td>
</tr>
<tr>
<td>Pyrophoric solids:</td>
<td>Not classified</td>
</tr>
<tr>
<td>Self-heating substances and mixtures:</td>
<td>Not classified</td>
</tr>
<tr>
<td>Substances and mixtures which, in contact with water, emit flammable gases:</td>
<td>Not classified</td>
</tr>
<tr>
<td>Oxidizing liquids:</td>
<td>No classification</td>
</tr>
</tbody>
</table>
### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Classification of the chemical substance or mixture:
- Single component

#### Chemical name or common name:
- Silica, vitreous

#### Synonyms:
- Silica Glass
Concentration or concentration range:

<table>
<thead>
<tr>
<th>Chemical name or common name</th>
<th>Abbreviation</th>
<th>Concentration or concentration range</th>
<th>Reference number in Gazetted List in Japan</th>
<th>CAS No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica, vitreous</td>
<td>-</td>
<td>More than 99.99%</td>
<td>(1)-548</td>
<td>60676-86-0</td>
</tr>
</tbody>
</table>

Chemical formula:

<Silica, vitreous>

\[
\text{SiO}_2
\]

Component subject to regulation:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Japanese Industrial Safety and Health Law</th>
<th>Japanese PRTR Law (Pollutant Release and Transfer Register)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica, vitreous</td>
<td>Japanese Industrial Safety and Health Law (Article 57-2 of the Law) - MSDS require Number 312</td>
<td>Not applicable to the specified chemical substances of Japanese PRTR Law</td>
</tr>
</tbody>
</table>

Impurities and stabilizing additives which contribute to the classification of GHS:

No information available

4. FIRST-AID MEASURES

SiO2 in a compact form is absolutely not dangerous, only in case of dry dust use the following measures:

IF INHALED:
- Remove a victim to fresh air and keep at rest in a position comfortable for breathing.
- Make an arrangement to get medical attention immediately.
- If feel unwell, call a physician.

IF ON SKIN:
- Wash with plenty of water and soap.
- In case of cut, conduct treatments such as hemostasis and disinfection, and get medical attention immediately.

IF IN EYES:
- Remove contact lenses, if present and not firmly fixed. Get medical attention immediately.
- Wash eyes with clean water immediately.
- If eye irritation persists: Get medical advice/attention.
- Do not rub eyes or close eyes tightly, since eye damage may occur by sharp edges such as glass pieces and/or powder.

IF SWALLOWED:
- Call a physician immediately. Rinse mouth.
- Do not induce vomiting.

Most important effects and symptoms:

No information available.

Protection for first-aid responders:

No information available

Note to physician:

No information available.
5. FIRE-FIGHTING MEASURES

Extinguishing media:
- Dry chemical powder, foam, carbon dioxide, sand
  - This product itself will not burn.

Unsuitable extinguishing media:
- Mist may be used for cooling purposes, but cylindrical water flow should not be used for extinguishing fire.

Specific hazards arising from the chemical if burning:
- No information available

Specific fire fighting measures:
- Fight fire from upwind side.
- Keep people away from around the fire generation site.
- Evacuate people to a safe place.

Special protective equipment for fire fighter:
- During fire-fighting, wear heat resistance gloves, safety goggles, and breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
- Keep people away from around the leakage site by encircling it with a rope.
- During working, wear rubber gloves, safety glasses, protective clothing, and a dust/mist filtering respirator so as to prevent adhering powder to the skin and inhalation of dust.

Environmental precautions:
- Exercise caution so as not to drain the leaked product into rivers, etc. but to minimize the adverse events on the environment.

Method of cleaning up:
- Sweep the scattered product and collect it into an empty container which can be closed tightly.

Prevention measures of secondary disaster:
- No information available

7. HANDLING AND STORAGE

Handling

Appropriate engineering controls:
- Take facility measures stated in Section 8. Exposure controls and personal protection and wear protective equipment.
- Exercise caution for fall, impulse, and weight load, since the product is liable to damages.
- Avoid use or handling which causes change in forms, since this material is fragile.

Local and entire ventilation:
- Conduct local or entire exhaust ventilation stated in Section 8. Exposure controls and personal protection.

General precautions:
- Ventilate when dust is generated during processing.

Safe handling advice
- To prevent the products from contamination, do not touch with bare hands.
Storage

Appropriate engineering controls:
No information available

Appropriate storage conditions:
Store in stable conditions not to cause inversion, fall, and damage.

Safe containers and packaging materials:
Use vinyl container and exercise caution for contamination (from viewpoint of quality).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Facility measures

In case of generation of dust by handling, install ventilation facility to keep the working site under the threshold limit value.

Administrative levels
Not established

Occupational Exposure Limits

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Silica, vitreous</td>
<td>1mg/m3</td>
<td>TWA</td>
</tr>
<tr>
<td></td>
<td>Silica, vitreous</td>
<td>0.1mg/m3</td>
<td>TWA</td>
</tr>
</tbody>
</table>

Personal protective equipment

Respiratory protection:
Dust/mist filtering respirator, air-supplied mask, etc.

Hand protection
Leather gloves

Eyes Protection:
Safety goggles or a face shield

Skin and body protection:
Long-sleeve shirts and long pants made of thick cloth

Appropriate hygiene measures:
Wash hands thoroughly and gargle after working, and eat and drink.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>Solid (Lumps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour:</td>
<td>White</td>
</tr>
<tr>
<td>Odour(Odour threshold):</td>
<td>Odor less</td>
</tr>
<tr>
<td>pH:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point/Freezing point:</td>
<td>There is no clear melting point</td>
</tr>
<tr>
<td>Boiling point:</td>
<td>2227 °C</td>
</tr>
<tr>
<td>Initial boiling point:</td>
<td>Unknown</td>
</tr>
<tr>
<td>Boiling range:</td>
<td>Unknown</td>
</tr>
<tr>
<td>Flash point:</td>
<td>Unknown</td>
</tr>
<tr>
<td>Auto-ignition temperature:</td>
<td>Unknown</td>
</tr>
<tr>
<td>Flammability (solid, gas):</td>
<td>Noncombustible</td>
</tr>
<tr>
<td>Lower flammability or explosive limits:</td>
<td>Unknown</td>
</tr>
</tbody>
</table>
### Upper flammability or explosive limits:

Unknown

### Vapor pressure:

Unknown

### Vapor density:

Unknown

### Evaporation rate:

Unknown

### Specific gravity (Relative density):

2.2g/cm³ (15 °C)

### Solubility:

Unknown

### Partition coefficient; n-octanol/water:

Unknown

### Decomposition temperature:

Unknown

### Other information:

No information available

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**10. STABILITY AND REACTIVITY**

Chemical stability:

- Stable at ordinary storage and handling conditions.

Possibility of hazardous reactions:

- Stable at ordinary storage and handling conditions.

Conditions to avoid:

- Extremely rapid heating, rapid cooling
- Fused or amorphous silica may become crystalline if held at high temperatures for extended periods of time.

Incompatible materials:

- No information available

Hazardous decomposition products:

- No information available

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**11. TOXICOLOGICAL INFORMATION**

**Acute toxicity:**

- Unknown

**Skin corrosion/Irritation:**

- Unknown

**Serious eye damage/irritation:**

- Unknown

**Respiratory sensitization/skin sensitization:**

- Unknown

**Mutagenicity (Germ cell mutagenicity):**

- Unknown

**Carcinogenicity:**

<table>
<thead>
<tr>
<th>Silica, vitreous</th>
<th>IARC: Group 3 (Cannot be classified as to its carcinogenicity to humans)</th>
</tr>
</thead>
</table>
Crystalline silica should be considered a possible human carcinogen based on this association. Fused silica has not been identified as a carcinogen.

Reproductive toxicity:
Unknown

Specific target organ toxicity - Single exposure:
Unknown

Specific target organ toxicity - Repeated exposure:
Unknown

Aspiration hazard:
Unknown

12. ECOLOGICAL INFORMATION

Ecotoxicity
Fish:
No information available

Crustacea:
No information available

Algae:
No information available

Persistence/Degradability:
No information available

Bioaccumulative Potential:
No information available

Mobility in soil:
No information available

Other adverse effects:
Do not dispose into a general environment due to no data in many items.

13. DISPOSAL CONSIDERATIONS

Residual wastes:
Consign disposal to the disposal-specialized services approved by a prefectural governor in accordance with "Waste Management and Public Cleansing Law."

Contaminated containers and packaging:
After removal of contents in the used packaging container completely, consign disposal to the disposal-specialized services approved by a prefectural governor in accordance with "Waste Management and Public Cleansing Law."
14. TRANSPORT INFORMATION

Domestic regulations:
Refer to laws and regulation that are applied.

Special precautions:
No information available

Special precautions and conditions in transport:
Load so that there will be no tumbling, dropping or damaging, and securely conduct load collapse prevention.
At the time of transportation by vehicles, always have the driver carry yellow cards.
In order to prevent mingling of foreign matter, and wetting with water, cover the goods with a sheet.
In case of bulky loading, in order to prevent load collapse, keep the stack lower or fix the goods in position

15. REGULATORY INFORMATION

<Silica, vitreous>
Substances to be notified, which are specified in Article 57 Item 2 of the Japanese Law on Industrial Safety and Hygiene
Waste Management and Public Cleansing Law (Industrial Wastes)

16. OTHER INFORMATION

References
<Silica, vitreous>
List of Chemical Substances Classified based on GHS Classification - GHS Classification Results, National Institute of Technology and Evaluation (NITE)
ACGIH, TLVs and BEIs Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices (2006)

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Director of Environment, Safety and Quality Control Department of Head Office
Please contact our customer services in your region for the product inquiries.

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