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

1.1. Product Identifier

Product name: Ocellus Silica Aerogel

1.2. Relevant identified uses of the substance or mixture

Identified uses: For research and industrial use only

1.3. Details of the manufacturer/supplier of the safety data sheet

Company: Ocellus, Inc.
450 Lindbergh Avenue
Livermore, CA 94551
USA
Telephone: +1 (925) 606-6540
Fax: +1 (925) 606-6594

1.4. Emergency telephone number

Emergency contact number: +1 (925) 606-6540 (USA)

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS): Combustible dust

For full text of the H-Statement(s) mentioned in this Section, See Section 16

2.2. GHS Label elements, including precautionary statements

Pictograms:

Signal Word: Danger

Hazard Statements:
H372 Causes damage to organs through prolonged or repeated exposure

Precautionary Statements:
P260 Do not breath dust/fume/gas/mist/vapors/spray
P264 Wash skin thoroughly after handling
P270 Do not eat, drink or smoke when using this product
P314 Get medical advice/attention if you feel unwell

2.3. Hazards not otherwise classified (HNOC) or not covered by GHS or HMIS: None
SECTION 3: Composition/information on ingredients

3.1. **Substances**
Synonyms: Silica Aerogel, amorphous silica, porous silica
Formula: SiO$_2$
Molecular Weight: 60.09 g/mol
CAS-No.: 7631-89-9
EC-No.: 231-545-4
Percentage: >99%

**Hazardous Components**
Silicon dioxide

STOT RE 1; H372

For full text of the H-Statement(s) mentioned in this Section, See Section 16

SECTION 4: First aid measures

4.1. **Description of first aid measures**

If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration.

In case of skin contact: Wash off with soap and plenty of water.

In case of eye contact: Flush eyes with water as a precaution

If swallowed: **DO Not Induce Vomiting!** Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention immediately.

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

Symptoms/injuries after inhalation: Inhalation of airborne fragments or dust may cause mechanical irritation of the upper respiratory tract

Symptoms/injuries after skin contact: Skin contact with fragments or dust from this product can produce a drying sensation and mechanical irritation of the skin and mucous membranes

Symptoms/injuries after eye contact: Exposure to fragments or dust from this product can produce drying sensation and mechanical irritation of the eyes

Symptoms/injuries after ingestion: This material is not intended to be ingested. If ingested in large quantity, the material may locally dehydrate contacted tissue, produce mechanical irritation, and/or result in blockage

Acute Health Hazards: Fragments and dust from this product are a physical irritant and may cause temporary irritation of scratchiness of the throat and/or itching and redness of the eyes and skin

Chronic Health Hazards: Product is not known to pose any chronic health hazards

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

Mechanical processing of product may result in lightweight fragments or dust. Inhalation of excessive...
amounts of dust from the product may cause mechanical irritation of the respiratory tract. Dermal contact may cause mechanical irritation of the skin.

Excessive inhalation of fragments or dust may aggravate pre-existing chronic lung conditions including, but not limited to, bronchitis, emphysema, and asthma. Dermal contact may aggravate existing dermatitis.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media
   Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2. Special hazards arising from the substance or mixture
   Fire Hazard: No data available

5.3. Advice for firefighters
   Protection during firefighting: Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots to prevent contact with skin and eyes

5.4. Additional Information: Not applicable

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
   Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Avoid breathing dust. For personal protections see section 8.

6.2. Environmental precautions
   Do not let product enter drains

6.3. Methods and material for containment and cleaning up
   Pick-up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal. Dispose of all waste and cleanup materials in accordance with regulations.

6.4. Additional information: Not applicable

SECTION 7: Handling and storage

7.1. Precautions for safe handling
   Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. Avoid inhalation. Avoid contact with eyes, skin and clothing. Avoid prolonged repeated exposure.

7.2. Conditions for safe storage, including any incompatibilities
   Store in a cool, dry container and in a well-ventilated place. Keep container tightly closed.

7.3. Specific end use(s): Not applicable

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Components with workplace control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control Parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon dioxide</td>
<td>7631-86-9</td>
<td>TWA 20 million particles per cubic foot</td>
<td>USA. Occupational Exposure Limits (OSHA) – Table Z-3 Mineral Dusts</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td>Based on impinger samples counted by light-field techniques. Mppcf X 35.3 = million particles per cubic meter = particles per cc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td></td>
<td>80 mg/m³ %SiO₂</td>
<td>USA. Occupational Exposure Limits (OSHA) – Table Z-3 Mineral Dusts</td>
<td></td>
</tr>
<tr>
<td>PEL</td>
<td></td>
<td>6 mg/m³</td>
<td>California permissible exposure limits for chemical Contaminants (Title 8, Article 107)</td>
<td></td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Appropriate engineering controls: General (mechanical) room ventilation is expected to be satisfactory of normal handling; Showers/Eyewash stations/Ventilation system

Personal protection equipment

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

Skin protection: Handle with Nitrile gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands

Respiratory protection: Provide local exhaust, preferably mechanical. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. If exposure levels are excessive, use and approved respirator. Wear NIOSH approved respiratory protective equipment when applicable limits may be exceeded.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a) Appearance
   Form: solid
   Color: white
b) Odor
   Odorless
c) Odor Threshold
   No data available
d) pH
   No data available
e) Melting point/freezing
   Melting point/range 1,600 °C (2,912 °F)
f) Initial boiling point/boling range
   2,200 °C (3,992 °F)
g) Flash point
   No data available
h) Evaporation rate
   No data available
i) Flammability (solid, gas)
   May form combustible dust concentrations in air
j) Upper/lower
   flammability of explosive limits
   No data available
k) Vapor pressure (mm Hg)
   No data available
l) Vapor density (Air=1)  No data available
m) Specific Gravity/Density  0.02 to 0.30 g/cm$^3$
n) Water solubility  Insoluble in water
o) Partition coefficient:  No data available
   n-octanol-water
p) Auto-ignition temperature  No data available
q) Decomposition temperature  No data available
r) Viscosity  No data available
s) Explosive properties  No data available
t) Oxidizing properties  No data available

9.2. Other Information:  Not applicable

SECTION 10: Stability and reactivity

10.1. Reactivity:  No data available
10.2. Chemical stability:  The product is stable under normal handling and storage conditions
10.3. Possibility of hazardous reactions:  No data available
10.4. Conditions to avoid:  No data available
10.5. Incompatible materials:  Strong oxidizing agents
10.6. Hazardous decomposition products:  Silicon oxides formed under fire conditions. Other decomposition products – No data available. In the event of fire: See section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:  The lethal dose for humans for synthetic amorphous silica is estimated at over 15000 mg/Kg.

Inhalation:  No data available
Dermal:  No data available
Skin corrosion/irritation:  No data available
Serious eye damage/eye irritation:  No data available
Respiratory or skin sensitization:  No data available
Germ cell mutagenicity:  No data available

Carcinogenicity

ARC:  No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:  No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:  No component of this product present at levels greater than or equal to 0.1% is identified
as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity; No data available

Specific target organ toxicity (single exposure): No data available

Specific target organ toxicity (repeated exposure): No data available

The substance or mixture is classified as specific organ toxicant, repeated exposure, category 1

Aspiration hazard: No data available

Additional Information RTECS: No data available

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

SECTION 12: Ecological information

12.1. Ecotoxicity 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 No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Waste disposal recommendations: Contact a licensed professional waste disposal service to dispose of this material. Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Contaminated packaging: Dispose of as unused product

SECTION 14: Transportation information

14.1 The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

DOT (US): Not dangerous goods

IMDG: Not dangerous goods
IATA: Not dangerous goods

SECTION 15: REGULATORY INFORMATION

15.1 US Federal Regulations

OSHA HAZARDS:
No known hazards

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components
<table>
<thead>
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Pennsylvania Right To Know Components
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New Jersey Right To Know Components
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<th>Revision Date</th>
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<tbody>
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</tr>
</tbody>
</table>

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm

SECTION 16: OTHER INFORMATION

Full text of H-Statement(s) referred to under sections 2 and 3.

H372 Causes damage to organs through prolonged or repeated exposure
STOT RE Specific target organ toxicity – repeated exposure*

POTENTIAL HEALTH EFFECTS:

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion: May be harmful if swallowed.
Skin: May be harmful if absorbed through skin. May cause skin irritation.
Eyes: May cause eye irritation.
HMIS Rating:
Health Hazard: 1
Chronic Health Hazard *
Flammability: 0
Physical Hazards: 0

NFPA Rating:
Health Hazard: 0
Fire: 0
Reactivity Hazard: 0

Preparation information:
Prepared 10/2001 – initial version 1.0
Prepared 12/2008 – revision 2.0
Prepared 6/13/2017 – revision 3.0

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