SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

GHS Product Identifier: Fume Silica
Chemical Name: Silica Fume, Amorphous Silica
Recommended Applications: Fume silica can be used in refractory and concrete formulations to enhance certain physical properties.

Manufacturer Information: TAM Ceramics, LLC (#220821)
4511 Hyde Park Blvd Niagara Falls, NY 14305
Phone Number: 716-278-9400

Website: www.tamceramics.com

SECTION 2. HAZARDS IDENTIFICATION

GHS Pictogram:
Signal word: WARNING
GHS classification:
Eye irritation, Category 2
Skin irritation, Category 2
Hazard Statement: Inert particles can be slightly, mechanically irritating to the eyes. Prolonged skin contact may cause skin irritation or dermatitis. Overexposure by inhalation may cause respiratory irritation.
Precautionary Statement: Wash hands thoroughly after handling. Minimize exposure by wearing protective gloves, clothing, eye protection and respiratory masks. Have a clean change of works clothes readily available. Avoid dust formation and utilize good housekeeping practices.
Route of Exposure: Eyes, skin, inhalation and ingestion.
Potential Health Effects:
Eye: May cause a slight irritation.
Skin: May cause a slight irritation.
Inhalation: Prolonged inhalation may cause respiratory tract irritations.
Ingestion: May irritate digestive tract if swallowed.
Chronic toxicity: Excessive inhalation of dust may cause chemical pneumonitis, cyanosis, and pulmonary edema.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>Weight %</th>
<th>OSHA</th>
<th>ACGIH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica, amorphous, fumed</td>
<td>69012-64-2</td>
<td>273-761-1</td>
<td>&gt;85%</td>
<td>6 mg/m³ TWA</td>
<td>Not established</td>
</tr>
<tr>
<td>Zirconium Dioxide</td>
<td>1314-23-4</td>
<td>215-227-2</td>
<td>0 - 10%</td>
<td>5 mg/m³ TWA as Zr</td>
<td>10 mg/m³ STEL as Zr</td>
</tr>
<tr>
<td>Calcium Oxide</td>
<td>1305-78-8</td>
<td>215-138-9</td>
<td>0 - 4%</td>
<td>5 mg/m³ TWA</td>
<td>2 mg/m³ TWA</td>
</tr>
</tbody>
</table>

OSHA particulate (not otherwise regulated) limit: 5 mg/m³ (respirable); 15 mg/m³ (total).

SECTION 4. FIRST AID MEASURES

Eye contact: Rinse eyes immediately with plenty of water on eye surfaces and under eyelids. Get medical attention if irritation develops.
Skin contact: Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. If symptoms persist, call a physician.
Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. If symptoms persist, call a physician.
Ingestion: Drink plenty of water. Consult a physician if necessary. Do not induce vomiting without medical advice.
Notes to physician: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Flash point: No data available
Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Hazardous decomposition products: Thermal decomposition can lead to release of irritating gases and vapors.
Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.
Unusual hazards: Dust may form explosive mixture in air.
Personal precautions: Avoid dust formation. Evacuate area of all unnecessary personnel. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Fine dust dispersed in air may ignite.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up: Use approved industrial vacuum cleaner for removal. Wear personal protective equipment. Dispose of promptly.

Handling: Handle in accordance with good industrial hygiene and safety practice. Avoid dust formation. Avoid contact with skin, eyes and clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Provide appropriate exhaust ventilation at places where dust is formed. Remove all sources of ignition. Wash hands thoroughly before eating, drinking or smoking.

Storage: Keep container tightly closed in a dry and well-ventilated place.

SECTION 2. EXPOSURE LIMITS

Exposure limits: See Section 3.

SECTION 3. PHYSICAL AND CHEMICAL PROPERTIES

Color: Light to Dark Gray
Odor: Odorless
Boiling point/range (°C): No data available
Melting point/range (°C): 1710
Vapor pressure (mmHg): No data available
Water solubility (mg/l): Insoluble
Physical state: Powder
Molecular weight: No data available
pH: No data available
Specific gravity (Water =1): 2.200
Evaporation rate (Water =1): No data available
VOC content (%): No data available
Odor threshold: No Data Available
Vapor pressure: No Data Available
Flash point: No Data Available
Flammability (solid, gas): No Data Available
Upper/lower flammability or explosive limits: No Data Available
Vapor density: No Data Available
Relative density: No Data Available
Partition coefficient: n-octanol/water: No Data Available
Auto-ignition temperature: No Data Available
Decomposition temperature: No Data Available
Viscosity: No Data Available

SECTION 4. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.
Polymerization: Will not occur.
Hazardous decomposition products: None under normal use.
Materials to avoid: None known.
Conditions to avoid: Avoid dust formation

SECTION 5. TOXICOLOGICAL INFORMATION

Acute toxicity: No data is available on the product itself.
Aquatic toxicity: No information available
Persistence and degradability: No information available

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid dust formation. Evacuate area of all unnecessary personnel. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Fine dust dispersed in air may ignite.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up: Use approved industrial vacuum cleaner for removal. Wear personal protective equipment. Dispose of promptly.

SECTION 7. HANDLING AND STORAGE

Handling: Handle in accordance with good industrial hygiene and safety practice. Avoid dust formation. Avoid contact with skin, eyes and clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Provide appropriate exhaust ventilation at places where dust is formed. Remove all sources of ignition. Wash hands thoroughly before eating, drinking or smoking.

Storage: Keep container tightly closed in a dry and well-ventilated place.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures: Ensure adequate ventilation, especially in confined areas.
Respiratory protection: Use NIOSH approved respirator when ventilation is inadequate.
Hand protection: Impervious gloves.
Skin and body protection: Lightweight protective clothing.
Eye protection: Safety glasses with side-shields.
Exposure limits: See Section 2.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling point/range (°C): No data available
Melting point/range (°C): 1710
Vapor pressure (mmHg): No data available
Water solubility (mg/l): Insoluble
Physical state: Powder
Molecular weight: No data available
pH: No data available
Specific gravity (Water =1): 2.200
Evaporation rate (Water =1): No data available
VOC content (%): No data available
Odor threshold: No Data Available
Vapor pressure: No Data Available
Flash point: No Data Available
Flammability (solid, gas): No Data Available
Upper/lower flammability or explosive limits: No Data Available
Vapor density: No Data Available
Relative density: No Data Available
Partition coefficient: n-octanol/water: No Data Available
Auto-ignition temperature: No Data Available
Decomposition temperature: No Data Available
Viscosity: No Data Available

SECTION 10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.
Polymerization: Will not occur.
Hazardous decomposition products: None under normal use.
Materials to avoid: None known.
Conditions to avoid: Avoid dust formation

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity: No data is available on the product itself.
Aquatic toxicity: No information available
Persistence and degradability: No information available

SECTION 12. ECOLOGICAL INFORMATION

Waste from residues / unused products: Waste must be disposed of in accordance with federal, state and local environmental control regulations. Where possible recycling is preferred to disposal or incineration.

SECTION 13. DISPOSAL CONSIDERATIONS

DOT: Proper shipping name: Not regulated.

TDG (Canada): Proper shipping name: Not regulated.

SECTION 14. TRANSPORT INFORMATION

U.S. Regulations:
Not subject to the provisions of SARA 313 Title III
Not subject to TSCA 12(b) Export Notification

State Regulations:
This product or its ingredients have been evaluated for New Jersey, Pennsylvania, and California Prop 65 supplier notification requirements. Substances that are subject to notification requirements, if any, are listed below.

Canadian WHMIS:
WHMIS hazard class: D2B Toxic materials.

International Inventories:
TSCA 8(b): All the ingredients are on the TSCA list.
Canadian DSL: All the ingredients are on the DSL.
EINECS: All the ingredients are on the EINECS list.
Philippines (PICCS): Listed.
Japan (ENCS): Listed.
Korea (KECL): Listed.
China (IECS): Listed.
Australia (AICS): Listed.

Not subject to TSCA 12(b) Export Notification

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This product or its ingredients have been evaluated for New Jersey, Pennsylvania, and California Prop 65 supplier notification requirements. Substances that are subject to notification requirements, if any, are listed below.

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Korea (KECL): Listed.
China (IECS): Listed.
Australia (AICS): Listed.
For Industrial Use Only

National Fire Protection Association (U.S.A.):
Health: 1
Fire: 0
Physical Hazard: 0
PPE: X

Prepared by: Product Manufacturer, TAM Ceramics Group of NY, LLC
Protective Equipment: Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Safety glasses.

The information and recommendations contained in this Safety Data Sheet have been compiled from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the SDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.

Last Updated: May 2015

End of Safety Data Sheet