

Safety Data Sheet

1. IDENTIFICATION

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| Product Identifier | Ag-HA, Sn-HA, GL1661 |
| Other Means of Identification | |
| SDS Number | HA (Hydroxyapatite) |
| Product Code | Ag-HA, Sn-HA, GL1661 |
| Recommended Use | Not available. |
| Recommended Restrictions | None known. |
| Manufacturer/Importers/Supplier/Distributor Information | |
| Manufacturer/Supplier | Mo-Sci Corporation, Mo-Sci Health Care, LLC, and Mo-Sci Specialty Products LLC |
| Address | 4040 Hypoint North Rolla, MO, USA 65401 |
| Telephone Number | 573-364-2338 |
| e-mail | mo-sci@mo-sci.com |
| Contact Person | Krista Grayson |
| Emergency Telephone Number | 573-364-2338 |

2. HAZARD IDENTIFICATION

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|--|--|
| Physical hazards | Not classified |
| Health hazards | Not classified |
| OSHA defined hazards | Not classified |
| Label elements | None |
| Hazard symbols | None |
| Signal word | None |
| Hazard statement | None |
| Precautionary statement | May irritate skin, eyes, mucous membranes |
| Prevention | Observe good industrial hygiene practices. |
| Response | Wash hands after handling. |
| Storage | Store away from incompatible materials. |
| Disposal | Dispose of in accordance with local regulations. |
| Hazard(s) not otherwise Classified (HNOC) | None known |

Glass is an amorphous fusion of materials whose constituents are tightly bound together and are in a specific chemical environment, totally different from the initial state (in raw materials) and from that occurring in simple compounds (metals or oxides). Under normal conditions, glass never gives metal or oxide as direct dissociation products. Under extreme conditions, only a tiny fraction of glass constituents could leach from the glass matrix into aqueous solutions.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures

| Chemical Name | CAS number | % |
|-------------------------|------------|-----|
| Glass, Oxide, Chemicals | 65997-17-3 | 100 |

Constituents

| Chemical Name | CAS number | % |
|---------------|------------|---|
| Proprietary | | |

Composition comments Concentrations are in percent by weight unless ingredient is a gas.
Gas concentrations are in percent by volume.

4. FIRST-AID MEASURES

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| Inhalation | If symptomatic, move to fresh air. Get medical attention if symptoms persist. |
| Skin Contact | Wash with soap and water. Get medical attention if symptoms occur. |
| Eye Contact | Material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention if symptoms persist. |

Ingestion Seek medical advice.
Most Important Symptoms/Effects, Acute and Delayed Direct contact with eyes may cause temporary irritation.
Indication of Immediate Medical Attention and Special Treatment Needed Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Water, Water fog, Foam, Dry chemical, and Carbon dioxide (CO₂)
Unsuitable Extinguishing Media None known
Specific Hazards Arising from the Chemical None known
Special Protective Equipment and Precautions for Firefighters
 Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.
Fire-fighting Equipment/Instructions
 Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
 Wear protective clothing as described in Section 8 of this SDS
Methods and Materials for Containment and Cleaning Up
 Sweep or scoop up and remove.
 For waste disposal, see Section 13 of the SDS
Environmental Precautions
 Avoid discharge into drains, water courses or onto the ground.

7. HANDLING AND STORAGE

Precautions for Safe Handling
 Wear appropriate personal protective equipment (See Section 8).
 Wash thoroughly after handling.
 Observe good industrial hygiene practices.
 Dust or powder: Use only with adequate ventilation.
 Avoid breathing dust.
Conditions for Safe Storage, including any Incompatibilities
 Store in a cool dry environment.
 Store away from incompatible materials (See Section 10).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

US OSHA Table z-1 Limits for Air Contaminants (29 CFR 1910.1000)

| Components | Type | Value | Form |
|-------------|------|----------------------|----------------------|
| Dust (CAS-) | PEL | 5 mg/m ³ | Respirable fraction. |
| | | 15 mg/m ³ | Total dust. |

US OSHA Table Z-3 (29 CFR 1910.1000)

| Components | Type | Value | Form |
|-------------|------|--------------------------|----------------------|
| Dust (CAS-) | TWA | 5 mg/m ³ | Respirable fraction. |
| | | 15 mg/m ³ | Total dust. |
| | | 50 millions of particles | Total dust. |
| | | 15 millions of particles | Respirable fraction. |

US ACGIH Threshold Limit Values

| Components | Type | Value | Form |
|-------------|------|----------------------|-----------------------|
| Dust (CAS-) | TWA | 3 mg/m ³ | Respirable particles. |
| | | 10 mg/m ³ | Total dust. |

Biological Limit Values No biological exposure limits noted for the ingredient(s).
Appropriate Engineering Controls Ensure adequate ventilation, especially in confined areas.
Individual Protection Measures, such as Personal Protective Equipment
Eye/Face Protection Normal eye protection practices should be used. If dusty conditions exist, chemical goggles are recommended.
Skin Protection
Hand Protection Regular work gloves.
Other Wear apron or protective clothing in case of contact. If contact with forearms is likely wear gauntlet style gloves.
Respiratory Protection

- If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
- In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134.
- Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Thermal Hazard
General Hygiene

Wear appropriate thermal protective clothing, when necessary.
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, or/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

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|---|--------------------|
| Appearance | Solid. |
| Physical State | Solid. |
| Form | Solid. Glass. |
| Color | White. |
| Odor | Odorless. |
| Odor Threshold | Not available. |
| pH (in water @25C) | Not available. |
| Melting Point/Freezing Point | Not available. |
| Softening Temperature | Not measured. |
| Initial Boiling Point and Boiling Range | Not applicable. |
| Flash Point | Not applicable. |
| Evaporation Rate | Not available. |
| Flammability (solid, gas) | Not applicable. |
| Upper/Lower Flammability or Explosive Limits | |
| Flammability Limit-Lower (%) | Not applicable. |
| Flammability Limit-Upper (%) | Not applicable. |
| Vapor Pressure | Not available. |
| Vapor Density | Not applicable. |
| Relative Density | Not available. |
| Solubility | |
| Solubility (water) | Not measured. |
| Partition Coefficient | No data available. |
| Auto-ignition Temperature | Not applicable. |
| Decomposition Temperature | Not applicable. |
| Viscosity | Not applicable. |
| Specific Gravity | Not measured. |
| Refractive Index | Not measured. |

10. STABILITY AND REACTIVITY

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| Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transportation. |
| Chemical Stability | Stable under the prescribed storage conditions. |
| Possibility of Hazardous Reactions | Hazardous polymerization will not occur. |
| Conditions to Avoid | Contact with incompatible materials. |
| Incompatible Materials | Strong acids. Strong bases. |
| Hazardous Decomposition Products | Metal oxides. |

11. TOXICOLOGICAL INFORMATION

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|---|---|
| Information on Likely Routes of Exposure | |
| Ingestion | No harmful effects expected in amounts likely to be ingested by accident. |
| Inhalation | No inhalation hazard under normal conditions. Contact with dust: May cause irritation to the respiratory system. |
| Skin contact | May cause skin sensitization in hypersensitive individuals. |
| Eye contact | Direct contact with eyes may cause temporary irritation. |
| Symptoms Related to the Physical, Chemical and Toxicological Characteristics | |
| | Direct contact with eyes may cause temporary irritation. |
| Information on Toxicological Effects | |

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|--|--|
| Acute Toxicity | May cause discomfort if swallowed. |
| Skin Corrosion/Irritation | Dust may irritate skin. |
| Serious Eye Damage/Eye Irritation | Direct contact with eyes may cause temporary irritation. |
| Respiratory or Skin Sensitization | |
| Respiratory Sensitization | No data available. |
| Skin Sensitization | Prolonged skin contact may cause dermatitis |
| Germ Cell Mutagenicity | No data available. |
| Carcinogenicity | This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. |
| IARC Mongraphs. Overall Evaluation of Carcinogenicity | Glass, oxide, chemicals (CAS 65997-17-3) 3 not classifiable as to carcinogenicity to humans |
| NTP Report on Carcinogens | Glass, oxide, chemicals (CAS 65997-17-3) Reasonably anticipated to be a Human Carcinogen. |
| Reproductive Toxicity | No data available. |
| Specific Target Organ Toxicity - Single Exposure | No data available. |
| Specific Target Organ Toxicity - Repeated Exposure | No data available. |
| Aspiration Hazard | Not applicable |

12. ECOLOGICAL INFORMATION

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|--------------------------------------|--|
| Ecotoxicity | Not expected to be harmful to aquatic organisms. |
| Persistence and Degradability | No data available. |
| Bioaccumulative Potential | No data available. |
| Mobility in Soil | The product is not mobile in soil. |
| Other Adverse Effects | None known. |

13. DISPOSAL CONSIDERATIONS

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| Disposal Instructions | Do not discharge into drains, water courses or onto the ground. |
| Local Disposal Regulations | Dispose in accordance with all applicable regulations. |
| Hazardous Waste Code | Not regulated. The waste code should be assigned in discussion between the user, the producer and the waste disposal company. |
| Waste from Residues/Unused Products | Recover and recycle, if practical. |
| Contaminated packaging | Dispose of in accordance with local regulations. |

14. TRANSPORT INFORMATION

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|---|-----------------------------------|
| DOT | Not regulated as dangerous goods. |
| IATA | Not regulated as dangerous goods. |
| IMDG | Not regulated as dangerous goods. |
| Transport in Bulk According to Annex II of MARPOL 73-78 and IBC Code | Not applicable. |

15. REGULATORY INFORMATION

| | | |
|---|--|----------------|
| US Federal Regulations | This product is not hazardous according to OSHA 29CFR 1910-1200. | |
| TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D) | | Not regulated. |
| US OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) | | Not listed. |
| CERCLA Hazardous Substance List (40CFR 302.4) | | Not listed. |
| Superfund Amendments and Reauthorization Act of 1986 (SARA) | | |
| Hazardous Categories | | |
| Immediate Hazard | No | |
| Delayed Hazard | No | |
| Fire Hazard | No | |
| Pressure Hazard | No | |
| Reactivity Hazard | No | |
| SARA 302 Extremely Hazardous Substance | Not listed. | |
| SARA 311/312 Hazardous Chemical | No | |
| SARA 313 (TRI reporting) | No | |
| Other Federal Regulations | | |
| Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List | | Not regulated. |
| Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130) | | Not regulated. |
| Safe Drinking Water Act (SDWA) | | Not Regulated. |

US State Regulations

US Massachusetts RTK – Substance List

Aluminum oxide (CAS 1344-28-1)
Quartz (CAS 14808-60-7)

US New Jersey Worker and community Right-to-Know Act

Aluminum oxide (CAS 1344-28-1)
Quartz (CAS 14808-60-7)

US Pennsylvania worker and Community Right-to-Know Law

Aluminum oxide (CAS 1344-28-1)
Quartz (CAS 14808-60-7)

US Rhode Island RTK

Aluminum oxide (CAS 1344-28-1)

US- California Proposition 65-Carcinogens & Reproductive Toxicity (CTR): Listed substance

Quartz (CAS 14808-60-7)

Warning: This product contains chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

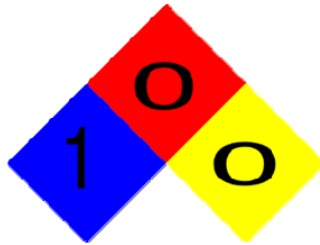
Internal Inventories

| Countries or Region | Inventory Name | On Inventory * |
|-----------------------------|--|----------------|
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| United States & Puerto Rico | Toxic Substance control Act (TSCA) Inventory | Yes |

*A "yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "no" indicates that one or more components of the products are not listed or except from listing on the inventory administered by the governing country(s).

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Issue Date 22-March-2018
Revision Date 19-July-2018
Version 01
Further Information The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.
NFPA Ratings



Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available.