

Product: MGS-1S Sulfate ISRU

# SAFETY DATA SHEET

Compliant with OSHA's Hazard Communication Standard, 29 CFR 1910.1200(g)

## SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** MGS-1S Sulfate ISRU  
**Product Use:** Regolith/planetary simulant

**Manufactured by:** University of Central Florida  
Office of Research and Commercialization  
12201 Research Parkway, 5<sup>th</sup> Floor  
Orlando, FL 23826-3246

**Emergency Contact:** 1-800-535-5053  
Or contact your regional Poison Control

**MSDS Issue Date:** 10/04/18

## SECTION 2 - HAZARDS IDENTIFICATION

### Hazard Classification:

Physical	Health
Not hazardous	Carcinogen Category 1A Specific Target Organ Toxicity – Repeated exposure

**Signal Word:** Danger

**Hazard Statements:** May cause cancer by inhalation. Causes damage to lungs through prolonged or repeated exposure by inhalation.

### Pictograms:



### Precautionary Statements - Prevention

Obtain special instructions before use  
Do not handle until all safety precautions have been read and understood  
Use personal protective equipment as required  
Do not breathe dust/fume/gas/mist/vapors/spray  
Wash face, hands and any exposed skin thoroughly after handling  
Do not eat, drink or smoke when using this product

### Precautionary Statements - Storage

Store locked up

**Precautionary Statements - Response**

If exposed or concerned: Get medical advice/attention

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**Carcinogenicity:** Natural terrestrial minerals are commonly contaminated with crystalline silica (quartz). Independent laboratory analyses indicate that crystalline silica is present in one or more of the simulant components. The International Agency on Research for Cancer (IARC) has classified silica dust, crystalline as a Group 1, known human carcinogen.

**SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS**

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<b>Component</b>	<b>CAS Number</b>	<b>Wt. %</b>
Gypsum	13397-24-5	40.0
Plagioclase	68476-25-5	16.4
Basaltic Glass	Not Listed	13.7
Pyroxene	14483-19-3	12.2
Olivine	10034-94-3	8.2
Epsomite	10034-99-8	2.4
Ferrihydrite	20344-49-4	2.1
Hydrated Silica	61790-53-2	1.8
Magnetite	1317-61-9	1.1
Anhydrite	14798-04-0	1.0
Siderite	14476-16-5	0.8
Hematite	1317-60-8	0.3
Sodium metasilicate pentahydrate	10213-79-3	0-5.0

**SECTION 4 - FIRST AID MEASURES**

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**Inhalation:** If irritation or discomfort exists, remove the exposed individual to fresh air.

**Eyes:** If irritation or discomfort exists, flush eyes lightly with water to remove dust.

**Skin:** Wash exposed skin if irritation exists.

**Ingestion:** Adverse effects not expected from this product.

**SECTION 5 - FIREFIGHTING MEASURES**

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**Flashpoint:** Not applicable (solid)

**Flammable Limits:** N/A

**Autoignition Temperature:** N/A

**Extinguishing Media:** Water Spray (Fog), Foam, CO<sub>2</sub>

**Unusual Fire and Explosion Hazards:** N/D

**Special Protective Equipment or Precautions for Firefighters:** N/A

**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

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**Use of Personal Precautions:** Wear protective equipment including gloves and safety glasses.

**Emergency Procedures:** N/A

**Methods and Materials Used for Containment:** N/A

**Cleanup Procedures:** Spray lightly with water to avoid creating dust and sweep/shovel into suitable container.

## SECTION 7 - HANDLING AND STORAGE

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**Precautions for Safe Handling:** Avoid creating dust. Wash exposed skin and clothes daily.

**Recommendations on the Conditions for Safe Storage:** Do not store near heat or open flame. Keep container closed when not in use. Special containers or storage locations are not required. Incompatible with strong oxidizers.

## SECTION 8 - EXPOSURE CONTROL/PERSONAL PROTECTION

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**Respiratory Protection:** Not required if dust levels are maintained below occupational exposure limits (TLV-TWA of 10 mg/m<sup>3</sup>). For levels above the occupational exposure limits wear an appropriate NIOSH approved respirator.

**Gloves:** None required. For hygiene purposes, chemically compatible gloves are appropriate.

**Protective Clothing:** None required. Confine work clothing to workplace and wash daily.

**Eye Protection:** Safety glasses should be worn.

## SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

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**Appearance:** Red powder.

**Upper/lower flammability or explosive limits:** N/D

**Odor:** None.

**Vapor pressure:** N/D

**Odor threshold:** N/D

**Vapor density:** N/D

**pH:** N/D

**Relative density:** N/D

**Melting point/freezing point:** N/D

**Solubility:** Insoluble in water.

**Initial boiling point and boiling range:** N/D

**Flash point:** N/D

**Evaporation rate:** N/D

**Flammability:** N/D

**Partition coefficient (n-octanol/water):** N/D

**Auto-ignition temperature:** N/D

**Decomposition temperature:** N/D

**Viscosity:** N/D

## SECTION 10 - STABILITY AND REACTIVITY

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**Stability:** Stable.

**Incompatibility (Materials to Avoid):** Strong oxidizers.

**Hazardous Decomposition Productions:** Releases carbon monoxide, carbon dioxide, sulfur monoxide, sulfur dioxide and methane upon combustion.

**Hazardous Polymerization:** Will not occur.

**Conditions to Avoid:** Heat, open flames, sparks.

## SECTION 11 – TOXICOLOGICAL INFORMATION

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**Likely routes of exposure:** Inhalation, eye contact.

**Symptoms related to the physical, chemical and toxicological characteristics:** None known.

**Effects of Chronic Exposure:** Adverse health effects including silicosis, lung cancer, autoimmune and chronic kidney diseases, tuberculosis, and non-malignant respiratory diseases are attributed to respirable crystalline silica.

**Numerical Measures of Toxicity:** No data available.

**Carcinogen Listings:** The International Agency on Research for Cancer (IARC) has classified silica dust, crystalline as a Group 1, known human carcinogen.

## SECTION 12 – ECOLOGICAL INFORMATION

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**Ecotoxicity:** No data available.

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No data available.

**Mobility in Soil:** No data available.

**Other Adverse Effects:** No data available.

## SECTION 13 – DISPOSAL CONSIDERATIONS

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**Waste Disposal Method:** Disposed of in accordance with all applicable local, state, and federal regulations.

## SECTION 14 – TRANSPORTATION INFORMATION

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**UN Number:** N/A

**UN Proper Shipping Name:** N/A

**Transport Hazard Class:** N/A

**Packing Group:** N/A

**Environmental Hazards:** N/A

**Transport in Bulk:** N/A

**Special Precautions in Connection with Transport:** N/A

## SECTION 15 – REGULATORY INFORMATION

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**Safety, Health and Environmental Regulations for the Product in Question:** None known.

## SECTION 16 – OTHER INFORMATION

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**SDS Prepared on:** 10/04/2018

**Last Known Revision:** 10/04/2018

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