# Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the Canadian Hazardous Products Regulations.

## SECTION 1: Identification

**1.1. Product identifier**
3M™ Glass Bubbles HGS Series - HGS2000, HGS3000, HGS4000, HGS5000, HGS6000, HGS8000X, HGS10000, HGS18000, HGS4K28, HGS7K32, HGS19K46

**1.2. Recommended use and restrictions on use**

**Intended Use**
Downhole Oil and Gas Applications, Industrial use

**Restrictions on use**
Not applicable

**1.3. Supplier's details**

| | |
|---|---|
| **Company:** | 3M Canada Company |
| **Division:** | Advanced Materials Division |
| **Address:** | 1840 Oxford Street East, Post Office Box 5757, London, Ontario N6A 4T1 |
| **Telephone:** | (800) 364-3577 |
| **Website:** | www.3M.ca |

**1.4. Emergency telephone number**
Medical Emergency Telephone:1-800-3M HELPS / 1800 364 3577

## SECTION 2: Hazard identification

**2.1. Classification of the substance or mixture**
Not classified according to the Canadian Hazardous Products Regulation.

**2.2. Label elements**
**Signal word**
Not applicable.

**Symbols**
Not applicable

**Pictograms**
Not applicable

**2.3. Other hazards**
None known.

## SECTION 3: Composition/information on ingredients

This material is a mixture.

| Ingredient | C.A.S. No. | % by Wt | Common Name |
|---|---|---|---|
| Synthetic Amorphous Crystalline-Free Silica | 7631-86-9 | <= 3 | Silica |
| Sulfur Dioxide (released upon breakage of glass bubbles) | 7446-09-5 | <= 0.19 | No Data Available |
| Soda Lime Borosilicate Glass (non-fibrous) | 65997-17-3 | >= 97 | No Data Available |

## SECTION 4: First aid measures

**4.1. Description of first aid measures**

**Inhalation:**
Remove person to fresh air. If you feel unwell, get medical attention.

**Skin Contact:**
Wash with soap and water. If signs/symptoms develop, get medical attention.

**Eye Contact:**
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

**If Swallowed:**
Rinse mouth. If you feel unwell, get medical attention.

**4.2. Most important symptoms and effects, both acute and delayed**
No critical symptoms or effects. See Section 11.1, information on toxicological effects.

**4.3. Indication of any immediate medical attention and special treatment required**
Not applicable

## SECTION 5: Fire-fighting measures

**5.1. Suitable extinguishing media**
Material will not burn. Use a fire fighting agent suitable for the surrounding fire.

**5.2. Unsuitable extinguishing media**
None Determined

**5.3. Special hazards arising from the substance or mixture**
None inherent in this product.

**5.4. Special protection actions for fire-fighters**
Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures**
Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation

to disperse or exhaust vapours, in accordance with good industrial hygiene practice. Use personal protective equipment based on the results of an exposure assessment. Refer to Section 8 for PPE recommendations. If anticipated exposure resulting from an accidental release exceeds the protective capabilities of the PPE listed in Section 8, or are unknown, select PPE that offers an appropriate level of protection. Consider the physical and chemical hazards of the material when doing so. Examples of PPE ensembles for emergency response could include wearing bunker gear for a release of flammable material; wearing chemical protective clothing if the spilled material is a corrosive, a sensitizer, a significant dermal irritant, or can be absorbed through the skin; or donning a positive pressure supplied-air respirator for chemicals with inhalation hazards. For information regarding physical and health hazards, refer to sections 2 and 11 of the SDS.

**6.2. Environmental precautions**
Avoid release to the environment.

**6.3. Methods and material for containment and cleaning up**
Collect as much of the spilled material as possible. Use wet sweeping compound or water to avoid dusting. Sweep up. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**
For industrial or professional use only. Not for consumer sale or use. Avoid breathing dust/fume/gas/mist/vapours/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

**7.2. Conditions for safe storage including any incompatibilities**
No special storage requirements.

## SECTION 8: Exposure controls/personal protection

**8.1. Control parameters**

**Occupational exposure limits**
If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

| Ingredient | C.A.S. No. | Agency | Limit type | Additional Comments |
|---|---|---|---|---|
| Particles (insoluble or poorly soluble) not otherwise specified, inhalable particles | 65997-17-3 | ACGIH | TWA(inhalable particulates):10 mg/m3 | |
| Particles (insoluble or poorly soluble) not otherwise specified, respirable particles | 65997-17-3 | ACGIH | TWA(respirable particles):3 mg/m3 | |
| Sulfur Dioxide (released upon breakage of glass bubbles) | 7446-09-5 | ACGIH | STEL:0.25 ppm | |
| Particles (insoluble or poorly soluble) not otherwise specified, inhalable particles | 7631-86-9 | ACGIH | TWA(inhalable particulates):10 mg/m3 | |
| Particles (insoluble or poorly soluble) not otherwise specified, respirable particles | 7631-86-9 | ACGIH | TWA(respirable particles):3 mg/m3 | |

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

**8.2. Exposure controls**

**8.2.1. Engineering controls**
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapours/spray. If ventilation is not adequate, use respiratory protection equipment.

**8.2.2. Personal protective equipment (PPE)**

**Eye/face protection**

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Safety Glasses with side shields

**Skin/hand protection**
No chemical protective gloves are required.

**Respiratory protection**

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

## SECTION 9: Physical and chemical properties

**9.1. Information on basic physical and chemical properties**

| | |
|---|---|
| **Physical state** | Solid |
| **Specific Physical Form:** | Fine Powder < 100 microns |
| **Colour** | White |
| **Odour** | Odourless |
| **Odour threshold** | *Not Applicable* |
| **pH** | *Not Applicable* |
| **Melting point/Freezing point** | *No Data Available* |
| **Boiling point** | *Not Applicable* |
| **Flash Point** | *Not Applicable* |
| **Evaporation rate** | *Not Applicable* |
| **Flammability** | Not Applicable |
| **Flammable Limits(LEL)** | *Not Applicable* |
| **Flammable Limits(UEL)** | *Not Applicable* |
| **Vapour Pressure** | *Not Applicable* |
| **Relative Vapour Density** | *Not Applicable* |
| **Density** | 0.25 - 0.63 g/cm3 |
| **Relative density** | 0.25 - 0.63 [*Ref Std:*WATER=1] |
| **Water solubility** | Negligible |
| **Solubility- non-water** | *Not Applicable* |
| **Partition coefficient: n-octanol/ water** | *No Data Available* |
| **Autoignition temperature** | *Not Applicable* |
| **Decomposition temperature** | *Not Applicable* |
| **Kinematic Viscosity** | *Not Applicable* |

| | |
|---|---|
| **Volatile Organic Compounds** | *Not Applicable* |
| **Percent volatile** | < 0.5 % weight |
| **VOC Less H2O & Exempt Solvents** | *Not Applicable* |
| **Molecular weight** | *No Data Available* |
| **Softening point** | >=600 ºC |

| | |
|---|---|
| **Particle Characteristics** | *Not Applicable* |

## SECTION 10: Stability and reactivity

**10.1. Reactivity**
This material is considered to be non reactive under normal use conditions.

**10.2. Chemical stability**
Stable.

**10.3. Possibility of hazardous reactions**
Hazardous polymerization will not occur.

**10.4. Conditions to avoid**
None known.

**10.5. Incompatible materials**
None known.

**10.6. Hazardous decomposition products**

| **Substance** | **Condition** |
|---|---|
| Oxides of Sulfur | If Breakage Occurs |

## SECTION 11: Toxicological information

**The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.**

**11.1. Information on Toxicological effects**

**Signs and Symptoms of Exposure**

**Based on test data and/or information on the components, this material may produce the following health effects:**

**Inhalation:**
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

**Skin Contact:**
Mechanical Skin irritation: Signs/symptoms may include abrasion, redness, pain, and itching.

**Eye Contact:**
Mechanical eye irritation: Signs/symptoms may include pain, redness, tearing and corneal abrasion.

**Ingestion:**

May be harmful if swallowed.

**Carcinogenicity:**

| Ingredient | CAS No. | Class Description | Regulation |
|---|---|---|---|
| Isopropanol manufacture (strong-acid process) | 7446-09-5 | Grp. 1: Carcinogenic to humans | International Agency for Research on Cancer |
| Special-purpose fibres such as E-glass and '475' glass fibres | 65997-17-3 | Grp. 2B: Possible human carc. | International Agency for Research on Cancer |

**Toxicological Data**
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

**Acute Toxicity**

| Name | Route | Species | Value |
|---|---|---|---|
| Overall product | Inhalation-Dust/Mist(4 hr) | | No data available; calculated ATE >12.5 mg/l |
| Overall product | Ingestion | | No data available; calculated ATE >2,000 - =5,000 mg/kg |
| Soda Lime Borosilicate Glass (non-fibrous) | Dermal | | LD50 estimated to be > 5,000 mg/kg |
| Soda Lime Borosilicate Glass (non-fibrous) | Ingestion | | LD50 estimated to be 2,000 - 5,000 mg/kg |
| Synthetic Amorphous Crystalline-Free Silica | Dermal | Rabbit | LD50 > 5,000 mg/kg |
| Synthetic Amorphous Crystalline-Free Silica | Inhalation-Dust/Mist (4 hours) | Rat | LC50 > 0.691 mg/l |
| Synthetic Amorphous Crystalline-Free Silica | Ingestion | Rat | LD50 > 5,110 mg/kg |
| Sulfur Dioxide (released upon breakage of glass bubbles) | Inhalation-Gas (4 hours) | Rat | LC50 1,000 ppm |

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

| Name | Species | Value |
|---|---|---|
| Soda Lime Borosilicate Glass (non-fibrous) | Professional judgement | No significant irritation |
| Synthetic Amorphous Crystalline-Free Silica | Rabbit | No significant irritation |
| Sulfur Dioxide (released upon breakage of glass bubbles) | official classification | Corrosive |

**Serious Eye Damage/Irritation**

| Name | Species | Value |
|---|---|---|
| Soda Lime Borosilicate Glass (non-fibrous) | Professional judgement | No significant irritation |
| Synthetic Amorphous Crystalline-Free Silica | Rabbit | No significant irritation |
| Sulfur Dioxide (released upon breakage of glass bubbles) | Human and animal | Corrosive |

**Skin Sensitization**

| Name | Species | Value |
|---|---|---|
| Synthetic Amorphous Crystalline-Free Silica | Human and animal | Not classified |

**Respiratory Sensitization**

For the component/components, either no data are currently available or the data are not sufficient for classification.

**Germ Cell Mutagenicity**

| Name | Route | Value |
|---|---|---|
| Synthetic Amorphous Crystalline-Free Silica | In Vitro | Not mutagenic |
| Sulfur Dioxide (released upon breakage of glass bubbles) | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| Sulfur Dioxide (released upon breakage of glass bubbles) | In vivo | Some positive data exist, but the data are not sufficient for classification |

**Carcinogenicity**

| Name | Route | Species | Value |
|---|---|---|---|
| Synthetic Amorphous Crystalline-Free Silica | Not Specified | Mouse | Some positive data exist, but the data are not sufficient for classification |
| Sulfur Dioxide (released upon breakage of glass bubbles) | Inhalation | Human and animal | Some positive data exist, but the data are not sufficient for classification |

**Reproductive Toxicity**

**Reproductive and/or Developmental Effects**

| Name | Route | Value | Species | Test result | Exposure Duration |
|---|---|---|---|---|---|
| Synthetic Amorphous Crystalline-Free Silica | Ingestion | Not classified for female reproduction | Rat | NOAEL 509 mg/kg/day | 1 generation |
| Synthetic Amorphous Crystalline-Free Silica | Ingestion | Not classified for male reproduction | Rat | NOAEL 497 mg/kg/day | 1 generation |
| Synthetic Amorphous Crystalline-Free Silica | Ingestion | Not classified for development | Rat | NOAEL 1,350 mg/kg/day | during organogenesis |
| Sulfur Dioxide (released upon breakage of glass bubbles) | Inhalation | Not classified for female reproduction | Mouse | NOAEL 30 ppm | 2 generation |
| Sulfur Dioxide (released upon breakage of glass bubbles) | Inhalation | Not classified for male reproduction | Mouse | NOAEL 30 ppm | 2 generation |
| Sulfur Dioxide (released upon breakage of glass bubbles) | Inhalation | Not classified for development | Human | NOAEL Not available | environmental exposure |

**Target Organ(s)**

**Specific Target Organ Toxicity - single exposure**

| Name | Route | Target Organ(s) | Value | Species | Test result | Exposure Duration |
|---|---|---|---|---|---|---|
| Sulfur Dioxide (released upon breakage of glass bubbles) | Inhalation | respiratory system | Causes damage to organs | Human | NOAEL 0.25 ppm | |

**Specific Target Organ Toxicity - repeated exposure**

| Name | Route | Target Organ(s) | Value | Species | Test result | Exposure Duration |
|---|---|---|---|---|---|---|
| Synthetic Amorphous Crystalline-Free Silica | Inhalation | respiratory system | Not classified | Human | NOAEL Not available | occupational exposure |
| Synthetic Amorphous Crystalline-Free Silica | Inhalation | silicosis | Not classified | Human | NOAEL Not available | occupational exposure |
| Sulfur Dioxide (released upon breakage of glass bubbles) | Inhalation | respiratory system | Not classified | Rat | LOAEL 10 ppm | 21 weeks |

**Aspiration Hazard**

For the component/components, either no data are currently available or the data are not sufficient for classification.

**Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.**

## SECTION 12: Ecological information

No data available.

## SECTION 13: Disposal considerations

**13.1. Disposal methods**

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Contact your sales representative for information on reclaiming this product. Dispose of waste product in a permitted industrial waste facility. Empty and clean product containers may be disposed as non-hazardous waste. Consult your specific regulations and service providers to determine available options and requirements.

## SECTION 14: Transport Information

Not regulated per U.S. DOT, IATA or IMO.

These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. 3M's transportation classifications are based on product formulation, packaging, 3M policies and 3M's understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information. This information applies only to transportation classification and not the packaging, labeling, or marking requirements. The original 3M package is certified for Canadian ground shipment only. If you are shipping by air or ocean, the package may not meet applicable regulatory requirements.

## SECTION 15: Regulatory information

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

**Global inventory status**

Contact 3M for more information.

## SECTION 16: Other information

**National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.**
**Health:** 1 **Flammability:** 0 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

**HMIS Hazard Classification**

**Health:** 1 **Flammability:** 0 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® IV) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® IV ratings are to be used with a fully implemented HMIS® IV program. HMIS® is a registered mark of the American Coatings Association (ACA).

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**3M Canada SDSs are available at www.3M.ca**