



SAFETY DATA SHEET

Creation Date: 2-17-21

Revision Date: 2-17-21

SDS-10, Revision Number: 1

1	Identification	<p>a) Product identifier used on the label: MH-105</p> <p>b) Other means of identification: Hydrogen Sulfide in Methane Simulant</p> <p>c) Recommended use of the chemical and restrictions on use: Calibration Gas</p> <p>d) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party: Bascom-Turner Instruments, Inc., 111 Downey Street, Norwood, MA 02062.</p> <p>e) Emergency telephone number: 781-769-9660</p>																				
2	Hazard(s) identification	<p>a) Classification of substance or mixture: GHS04 Gas Cylinder</p> <p>b) Signal word: Warning</p> <div data-bbox="467 575 591 695" style="display: inline-block; vertical-align: top;"> </div> <p>Hazard Statements: H280 Contains gas under pressure; may explode if heated Asphyxiant – May displace oxygen and cause suffocation</p> <p>Precautionary Statements: P202 - Do not handle until all safety precautions have been read and understood P271 - Use only outdoors or in a well-ventilated area P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing P313 - Get medical advice/attention P403 - Store in a well-ventilated place</p> <p>c) Hazards not otherwise classified: None known.</p> <p>d) No component at 1% concentration or higher having unknown acute toxicity.</p>																				
3	Composition/ information on ingredients	<table border="1" data-bbox="451 1052 1474 1388"> <thead> <tr> <th data-bbox="451 1052 623 1157">Hazardous Ingredients Approximate</th> <th data-bbox="623 1052 813 1157">Concentration %</th> <th data-bbox="813 1052 992 1157">C.A.S. N.A. or U.N. Number</th> <th data-bbox="992 1052 1273 1157">“Exposure limits”</th> <th data-bbox="1273 1052 1474 1157">LD50/LC50</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 1157 623 1220">Helium</td> <td data-bbox="623 1157 813 1220">31%</td> <td data-bbox="813 1157 992 1220">7440-59-7</td> <td data-bbox="992 1157 1273 1220">ACGIH – TLV: simple asphyxiant</td> <td data-bbox="1273 1157 1474 1220">N/A</td> </tr> <tr> <td data-bbox="451 1220 623 1283">Nitrogen</td> <td data-bbox="623 1220 813 1283">69%</td> <td data-bbox="813 1220 992 1283">7727-37-9</td> <td data-bbox="992 1220 1273 1283">ACGIH – TLV: simple asphyxiant</td> <td data-bbox="1273 1220 1474 1283">N/A</td> </tr> <tr> <td data-bbox="451 1283 623 1388">Hydrogen Sulfide</td> <td data-bbox="623 1283 813 1388">25 ppm</td> <td data-bbox="813 1283 992 1388">7783-06-4</td> <td data-bbox="992 1283 1273 1388">20 ppm C OSHA-PEL 10 ppm TWA ACGIH 15 ppm STEL ACGIH</td> <td data-bbox="1273 1283 1474 1388">LC50 712 ppm/1hr. Rat Inhalation</td> </tr> </tbody> </table>	Hazardous Ingredients Approximate	Concentration %	C.A.S. N.A. or U.N. Number	“Exposure limits”	LD50/LC50	Helium	31%	7440-59-7	ACGIH – TLV: simple asphyxiant	N/A	Nitrogen	69%	7727-37-9	ACGIH – TLV: simple asphyxiant	N/A	Hydrogen Sulfide	25 ppm	7783-06-4	20 ppm C OSHA-PEL 10 ppm TWA ACGIH 15 ppm STEL ACGIH	LC50 712 ppm/1hr. Rat Inhalation
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4	First aid measures	<p>a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion: Inhalation: No unusual health effects are anticipated after exposure to this product, due to the small cylinder size. If any adverse symptom develops after over-exposure to this product, remove victim(s) to fresh air as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation if necessary. Skin Contact: Adverse effects not expected from this product. Eye Contact: Adverse effects not expected from this product. Ingestion: Not a likely route of exposure. General: Victim(s) who experience any adverse effect after over-exposure to this product must be taken for medical attention. Take a copy of the label and the MSDS to physician or other health professional with victim(s)</p> <p>b) Most important symptoms/effects, acute and delayed: No further information is available. Inhalation: May displace oxygen and cause rapid suffocation. May cause respiratory irritation. Skin Contact: Adverse effects not expected from this product. Eye Contact: Adverse effects not expected from this product. Ingestion: Not a likely route of exposure.</p> <p>c) Indication of immediate medical attention and special treatment needed, if necessary. If breathing is difficult, give oxygen. If breathing difficulty persists, seek medical attention.</p>
5	Fire-fighting measures	<p>a) Suitable (and unsuitable) extinguishing media. Use fire extinguishing media suitable for surrounding fire.</p> <p>b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products): The gas mixture is not flammable; however, containers, when involved in fire, may rupture or burst in the heat of the fire.</p> <p>c) Special protective equipment and precautions for fire-fighters. Use self-contained breathing apparatus and full protective gear. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire</p>
6	Accidental release measures	<p>a) Personal precautions, protective equipment, and emergency procedures: Due to the small size and content of the cylinder (e.g., 105 liters), an accidental release of this product presents significantly less risk of an oxygen deficient environment and other safety hazards than a similar release from a larger cylinder. Treat any fumes as toxic.</p> <p>b) Methods and materials for containment and cleaning up. In a confined area, NIOSH approved respiratory equipment may be required. This product presents significantly less risk of an oxygen deficient environment and other safety hazards than a similar release from a larger cylinder. Try to stop release if it is safe to do so. Evacuate and limit access. Ventilate area.</p>
7	Handling and storage	<p>a) Precautions for safe handling: Cylinders should be firmly secured to prevent falling or being knocked-over.</p> <p>b) Conditions for safe storage, including any incompatibilities: Cylinders must be protected from the environment, and preferably kept at room temperature. Cylinders should be stored in dry, well-ventilated areas, away from sources of heat, ignition, and direct sunlight. Protect cylinders against physical damage.</p>

8	Exposure controls/personal protection	<p>a) OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available: Control Parameters: All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use mechanical ventilation for storage areas. Use appropriate ventilation to keep Exposure Limits in Air below TLV & PEL limits.</p> <p>Components with occupational exposure limits</p> <p>Nitrogen 7727-37-9 Withdrawn TLV (simple asphyxiant)</p> <p>Hydrogen Sulfide (7783-06-4)</p> <table border="0"> <tr> <td>ACGIH</td> <td>TWA (ppm)</td> <td>1 ppm</td> </tr> <tr> <td>ACGIH</td> <td>STEL (ppm)</td> <td>5 ppm</td> </tr> <tr> <td>OSHA</td> <td>PEL (ceiling) (ppm)</td> <td>20 ppm</td> </tr> </table> <p>b) Appropriate engineering controls: Use local exhaust ventilation to reduce concentrations to within current exposure limits.</p> <p>c) Individual protection measures, such as personal protective equipment. Breathing equipment: Not necessary in well-ventilated room. In case of intensive or long-term exposure use a respiratory device with an independent air supply.</p>	ACGIH	TWA (ppm)	1 ppm	ACGIH	STEL (ppm)	5 ppm	OSHA	PEL (ceiling) (ppm)	20 ppm
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9	Physical and chemical properties	<p>a) Appearance (physical state, color, etc.): Colorless gas</p> <p>b) Odor: Rotten egg odor</p> <p>c) Odor threshold: Not determined.</p> <p>d) pH: N/A</p> <p>e) Melting point/freezing point: Helium: -272°C @ 26 atm; Nitrogen: -210°C.</p> <p>f) Initial boiling point and boiling range: Helium: -269°C; Nitrogen: -195.8°C</p> <p>g) Flash point: Non-flammable</p> <p>h) Evaporation rate: N/A</p> <p>i) Flammability (solid, gas): Non-flammable.</p> <p>j) Upper/lower flammability or explosive limits: N/A.</p> <p>k) Vapor pressure: Helium: 1719 mmHg @ -269°C</p> <p>l) Vapor density (Air = 1): Helium: 0.138; Nitrogen: 0.906</p> <p>m) Relative density: Not determined.</p> <p>n) Solubility(ies) in water: Helium: 0.94%; Nitrogen 0.023 vol/vol; Hydrogen sulfide: slight</p> <p>o) Partition coefficient: n-octanol/water: Not determined</p> <p>p) Auto-ignition temperature: N/A</p> <p>q) Decomposition temperature: No decomposition</p> <p>r) Viscosity: N/A</p>									
10	Stability and reactivity	<p>a) Reactivity: No further relevant information.</p> <p>b) Chemical stability: Stable under normal conditions.</p> <p>c) Possibility of hazardous reactions: Hydrogen sulfide can form explosive compounds with nitric acid.</p> <p>d) Conditions to avoid (e.g., static discharge, shock, or vibration): No further information.</p> <p>e) Incompatible materials: Nitrogen, the major component of this gas mixture, reacts with some metals (calcium, magnesium, titanium)</p> <p>f) Hazardous decomposition products: Under normal storage, hazardous decomposition products should not be produced.</p>									

11	Toxicological information	<p>Description of the various toxicological (health) effects and the available data used to identify those effects, including:</p> <p>a) Information on the likely routes of exposure: <u>Inhalation</u>: Inhalation can result in nausea, vomiting, dizziness, tingling sensation, suffocation, convulsions, and coma due to lack of oxygen <u>Skin</u>: No irritating effect <u>Eye</u>: No irritating effect <u>Ingestion</u>: Not a likely route of entry.</p> <p>b) Symptoms related to the physical, chemical and toxicological characteristics: <u>Inhalation</u>: Effects of Acute Exposure to Product: Inhalation can result in central nervous system depression, difficulty breathing, nausea, vomiting, dizziness, tingling sensation, suffocation, convulsions, and coma.</p> <p>c) Delayed and immediate effects and also chronic effects from short- and long-term exposure: <u>Inhalation</u>: Edema has been reported following exposure to concentrations of hydrogen sulfide as low as 50 ppm which is twice the concentration of this product <u>Chronic Exposure to Eyes</u>: Repeated exposure to low concentrations is reported to cause conjunctivitis, photophobia, tears, pain, and blurred vision <u>General</u>: Victim(s) who experience any adverse effect after over-exposure to this product must be taken for medical attention. Take a copy of the label and the SDS to physician or other health professional with victim(s).</p> <p>d) Numerical measures of toxicity (such as acute toxicity estimates): LD/LC50 values that are relevant for classification:</p> <table border="1" data-bbox="500 877 1448 978"> <thead> <tr> <th>Product/ingredient name</th> <th>Result</th> <th>Species</th> <th>Dose</th> <th>Exposure</th> </tr> </thead> <tbody> <tr> <td>Nitrogen (7727-37-9)</td> <td>LC₅₀ inhalation</td> <td>Rat</td> <td>820000 ppm</td> <td>4 hrs.</td> </tr> <tr> <td>Hydrogen Sulfide</td> <td>LC₅₀ inhalation</td> <td>Rat</td> <td>712 ppm</td> <td>1 hour</td> </tr> </tbody> </table> <p>e) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA.: No components of this gas are classified as possible carcinogens, mutagens or reproductive toxins by the US or any US States.</p>	Product/ingredient name	Result	Species	Dose	Exposure	Nitrogen (7727-37-9)	LC ₅₀ inhalation	Rat	820000 ppm	4 hrs.	Hydrogen Sulfide	LC ₅₀ inhalation	Rat	712 ppm	1 hour					
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12	Ecological information (Non-mandatory)	<p>a) Ecotoxicity (aquatic and terrestrial, where available):</p> <table border="1" data-bbox="500 1188 1289 1377"> <thead> <tr> <th colspan="4">Hydrogen sulfide (7783-06-4)</th> </tr> <tr> <th></th> <th>Species</th> <th>Dose</th> <th>Exposure</th> </tr> </thead> <tbody> <tr> <td>LC₅₀ fish 1</td> <td>Lepomis macrochiris</td> <td>0.0448 mg/L</td> <td>96 hrs.</td> </tr> <tr> <td>LC₅₀ fish 2</td> <td>Pimephales promelas</td> <td>0.016 mg/L</td> <td>96 hrs.</td> </tr> <tr> <td>EC₅₀ Daphnia</td> <td>Gammarus pseudolimnaeus</td> <td>0.022 mg/L</td> <td>96 hrs.</td> </tr> </tbody> </table> <p>b) Persistence and degradability: No relevant information available. c) Bioaccumulative potential: No relevant information available. d) Mobility in soil: No relevant information available. e) Other adverse effects (such as hazardous to the ozone layer): None</p>	Hydrogen sulfide (7783-06-4)					Species	Dose	Exposure	LC ₅₀ fish 1	Lepomis macrochiris	0.0448 mg/L	96 hrs.	LC ₅₀ fish 2	Pimephales promelas	0.016 mg/L	96 hrs.	EC ₅₀ Daphnia	Gammarus pseudolimnaeus	0.022 mg/L	96 hrs.
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13	Disposal considerations (Non-mandatory)	<p>Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging: Once the cylinders are relieved of pressure (empty) they are not considered hazardous material or waste. It is acceptable to place empty cylinders in a landfill if local laws permit</p>																				

<p>14</p>	<p>Transport information (Non-mandatory)</p>	<p>a) UN number: UN1981. b) UN proper shipping name: Compressed gases, n.o.s. c) Transport class(es): 2.2 (Non-flammable gas) d) Packing group: 302; 305 e) Environmental hazards (e.g., Marine pollutant (Yes/No)); Not Applicable f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code); MARPOL73/78 and the IBC Code: Not Applicable Addition Information: DOT quantity limitations: passenger aircraft/rail: 75 kg Cargo aircraft only: 150 kg. g) Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises. Not Applicable</p>						
<p>15</p>	<p>Regulatory information (Non-mandatory)</p>	<p>Safety, health and environmental regulations specific for the product in question</p> <p>Nitrogen (7727-37-9) Listed on the United States TSCA (Toxic Substances Control Act) inventory</p> <p>Hydrogen sulfide (7783-06-4) Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302 Listed on United States SARA Section 313 SARA Section 302 Threshold Planning Quantity (TPQ) 500 SARA Section 313 - Emission Reporting 1.0 %</p> <p>Nitrogen (7727-37-9) U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List</p> <p>Hydrogen sulfide (7783-06-4) U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List</p>						
<p>16</p>	<p>Other information, including date of preparation or last revision</p>	<p>Hazardous Material Information System (U.S.A.) National Fire Protection Association (U.S.A.)</p> <table data-bbox="487 1386 730 1512"> <tr> <td>Health</td> <td>1</td> </tr> <tr> <td>Flammability</td> <td>0</td> </tr> <tr> <td>Physical Hazard</td> <td>0</td> </tr> </table> <div data-bbox="779 1365 1429 1638"> </div> <p>The date of preparation of the SDS or the last change to it: 17 February 2021</p>	Health	1	Flammability	0	Physical Hazard	0
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