




SAFETY DATA SHEET

Creation Date: 2-17-21

Revision Date: 2-17-21

SDS-6, Revision Number: 1

1	Identification	<p>a) Product identifier used on the label: HC-105, HCA-001</p> <p>b) Other means of identification: Carbon Monoxide and Pentane Calibration Gas</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> <p></p> <p>Hazard Statements: H280 Contains gas under pressure; may explode if heated Simple Asphyxiant – May displace oxygen and cause suffocation</p> <p>Precautionary Statements: P410: Protect from Sunlight 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"> <thead> <tr> <th data-bbox="451 884 623 982">Hazardous Ingredients Approximate</th> <th data-bbox="623 884 816 982">Concentration %</th> <th data-bbox="816 884 995 982">C.A.S. N.A. or U.N. Number</th> <th data-bbox="995 884 1279 982">"Exposure limits"</th> <th data-bbox="1279 884 1484 982">LD50/LC50</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 982 623 1205">Carbon Monoxide</td> <td data-bbox="623 982 816 1205">0.01% (100 ppm)</td> <td data-bbox="816 982 995 1205">630-08-0</td> <td data-bbox="995 982 1279 1205">ACGIH TLV 25 ppm OSHA PEL 50 ppm NIOSH C 200 ppm</td> <td data-bbox="1279 982 1484 1205">1807 ppm/4hrs. LC50 Rat Inhalation 1334 ppm LD50 Wild Bird Inhalation</td> </tr> <tr> <td data-bbox="451 1205 623 1304">Pentane</td> <td data-bbox="623 1205 816 1304">0.75%</td> <td data-bbox="816 1205 995 1304">109-66-0</td> <td data-bbox="995 1205 1279 1304">ACGH TWA 600 ppm OSHA TWA 1000 ppm NIOSH C 610 ppm</td> <td data-bbox="1279 1205 1484 1304">364 g/m3/4hrs. LC50 RAT Inhalation</td> </tr> <tr> <td data-bbox="451 1304 623 1371">Oxygen</td> <td data-bbox="623 1304 816 1371">18 – 23%</td> <td data-bbox="816 1304 995 1371">7782-44-7</td> <td data-bbox="995 1304 1279 1371">None, Oxygen should be maintained >19.5%</td> <td data-bbox="1279 1304 1484 1371"></td> </tr> <tr> <td data-bbox="451 1371 623 1470">Nitrogen (Main Component)</td> <td data-bbox="623 1371 816 1470">Balance</td> <td data-bbox="816 1371 995 1470">7727-37-9</td> <td data-bbox="995 1371 1279 1470">None, Nitrogen is a simple asphyxiant</td> <td data-bbox="1279 1371 1484 1470"></td> </tr> </tbody> </table>	Hazardous Ingredients Approximate	Concentration %	C.A.S. N.A. or U.N. Number	"Exposure limits"	LD50/LC50	Carbon Monoxide	0.01% (100 ppm)	630-08-0	ACGIH TLV 25 ppm OSHA PEL 50 ppm NIOSH C 200 ppm	1807 ppm/4hrs. LC50 Rat Inhalation 1334 ppm LD50 Wild Bird Inhalation	Pentane	0.75%	109-66-0	ACGH TWA 600 ppm OSHA TWA 1000 ppm NIOSH C 610 ppm	364 g/m3/4hrs. LC50 RAT Inhalation	Oxygen	18 – 23%	7782-44-7	None, Oxygen should be maintained >19.5%		Nitrogen (Main Component)	Balance	7727-37-9	None, Nitrogen is a simple asphyxiant	
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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:</p> <p>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.</p> <p>Skin Contact: Generally does not cause skin irritation. Frostbite may occur in cases of contact with liquefied material. Immerse in lukewarm water (105°F) or wrap in warm blanket if water is unavailable. Consult a physician.</p> <p>Eye Contact: Not anticipated under normal use. Rinse under running water. Consult a physician.</p> <p>Ingestion: Not a likely route of exposure. If ingested and symptoms arise, consult a physician.</p> <p>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.</p> <p>c) Indication of immediate medical attention and special treatment needed, if necessary. No further information is available.</p>
5	Fire-fighting measures	<p>a) Suitable (and unsuitable) extinguishing media. Non-flammable gas mixture. 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.</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.</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>Pentane CAS: 109-66-0 PEL long term value: 1800 mg/m³, 1000 ppm REL long term value: 1800 mg/m³, 1000 ppm</p> <p>Carbon Monoxide: 630-08-0 PEL long term value: 55 mg/m³, 50 ppm REL long term value: 40 mg/m³, 35 ppm Ceiling limit: 229 mg/m³, 200 ppm TLV long-term value: 29 mg/m³, 25 ppm</p> <p>b) Appropriate engineering controls: No special ventilation systems or engineering controls are needed under normal circumstances of use. As with all chemicals, use product in well ventilated areas.</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>
9	Physical and chemical properties	<p>a) Appearance (physical state, color, etc.): Clear colorless gas</p> <p>b) Odor: No odor</p> <p>c) Odor threshold: N/A</p> <p>d) pH: N/A</p> <p>e) Melting point/freezing point: Not determined</p> <p>f) Initial boiling point and boiling range: Not determined.</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: Not determined.</p> <p>k) Vapor pressure: Not determined</p> <p>l) Vapor density: Not determined</p> <p>m) Relative density: Not determined.</p> <p>n) Solubility(ies): Not miscible.</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: No dangerous reactions.</p> <p>d) Conditions to avoid (e.g., static discharge, shock, or vibration): No further relevant information.</p> <p>e) Incompatible materials: Strong oxidizing agents, phosphorus, organic materials, powdered metals, alkali metals, alkali metal oxides.</p> <p>f) Hazardous decomposition products: Carbon Oxides and Nitrogen Oxides</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>: Not expected to be harmful or irritating <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. <u>Skin and Eye Contact</u>: Skin or eye contact with liquid or ingestion of liquid can cause freezing.</p> <p>c) Delayed and immediate effects and also chronic effects from short- and long-term exposure: Pre-existing respiratory conditions may be aggravated by over-exposure to this product. Carbon monoxide, a component of this gas mixture, can aggravate some diseases of the cardiovascular system, such as coronary artery disease and angina pectoris. 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="500 884 1373 982"> <thead> <tr> <th>Product/ingredient name</th> <th>Result</th> <th>Species</th> <th>Dose</th> <th>Exposure</th> </tr> </thead> <tbody> <tr> <td>Carbon Monoxide</td> <td>LC50 inhalation</td> <td>Rat</td> <td>7520 mg/l</td> <td>4 hours</td> </tr> <tr> <td>Pentane</td> <td>LC50 Inhalation</td> <td>Rat</td> <td>364 g/m³</td> <td>4 hours</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.: Not available.</p>	Product/ingredient name	Result	Species	Dose	Exposure	Carbon Monoxide	LC50 inhalation	Rat	7520 mg/l	4 hours	Pentane	LC50 Inhalation	Rat	364 g/m ³	4 hours
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12	Ecological information (Non-mandatory)	<p>a) Ecotoxicity (aquatic and terrestrial, where available): No relevant information available.</p> <p>b) Persistence and degradability: No relevant information available.</p> <p>c) Bioaccumulative potential: No relevant information available.</p> <table border="1" data-bbox="500 1213 1484 1281"> <thead> <tr> <th>Product/ingredient name</th> <th>LogPow</th> <th>BCF</th> <th>Potential</th> </tr> </thead> <tbody> <tr> <td>n-pentane</td> <td>3.45</td> <td>171</td> <td>low</td> </tr> </tbody> </table> <p>d) Mobility in soil: No relevant information available.</p> <p>e) Other adverse effects (such as hazardous to the ozone layer): None</p>	Product/ingredient name	LogPow	BCF	Potential	n-pentane	3.45	171	low							
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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>															
14	Transport information (Non-mandatory)	<p>a) UN number: UN1956.</p> <p>b) UN proper shipping name: Compressed gases, n.o.s. (Nitrogen, Oxygen).</p> <p>c) Transport class(es): 2.2 (Non-flammable gas)</p> <p>d) Packing group: DOT, ADR, IMDG, IATA Non-Regulated Material</p> <p>e) Environmental hazards (e.g., Marine pollutant (Yes/No)); Not Applicable</p> <p>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.</p> <p>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>															

15	<p>Regulatory information (Non-mandatory)</p>	<p>Safety, health and environmental regulations specific for the product in question Section 355 (extremely hazardous substances): None of the ingredients are listed. Section 313 (Specific toxic chemical listings): None of the ingredients are listed. TSCA (Toxic Substances Control Act): All ingredients are listed or exempt from listing. Chemicals known to cause cancer: None of the ingredients are listed. Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed. Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed. Chemicals known to developmental toxicity: None of the ingredients are listed.</p>						
16	<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="487 567 714 672"> <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="779 525 1445 798"> <p style="text-align: center;">Flammability</p> <p style="text-align: center;">Health Instability/Reactivity</p> </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
Health	1							
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