

This product contains pentane, oxygen, carbon monoxide, hydrogen sulfide, and nitrogen, substances subject to the Pennsylvania Worker and Community Right-To-Know Act.

**PRODUCT IDENTITY**

LABEL IDENTITY - MSA P/N 10007049 Calibration Check Gas, 0.35% Pentane, 19% Oxygen, 100 ppm Carbon Monoxide, and 25 ppm Hydrogen Sulfide in Nitrogen

CHEMICAL NAME - Pentane, Oxygen, Carbon Monoxide, Hydrogen Sulfide, Nitrogen Mixture

ADDITIONAL IDENTITIES - MSA P/N 10007049 Calibration Gas

FORMULA -  $C_5H_{12} + O_2 + CO + H_2S$  in  $N_2$

**APPLICABLE CHEMICAL CONTENTS**

	<u>%</u>	<u>TWA</u>	<u>STEL</u>
Pentane (CAS 109-66-0) (ACGIH 2010)	0.35	600 ppm (0.06%)	-----
Oxygen (CAS 7782-44-7)	19	None	-----
Carbon Monoxide (CAS 630-08-0) (ACGIH 2010)	0.01	25 ppm	-----
Hydrogen Sulfide (CAS 7783-06-4) (ACGIH 2010)	0.0025	1 ppm	5 ppm
Nitrogen (CAS 7727-37-9)	Balance	None	-----

NOTE: Gas under pressure, 500 PSIG at 70°F, Approx. 58 Liters at Atmospheric Pressure

**PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE AND ODOR - Colorless Gas, Faint Hydrocarbon Odor

Following information is for Nitrogen the main component of this gas mixture

BOILING POINT - -320.4°F (-195.8 °C)      SPECIFIC GRAVITY (air = 1) @70°F (21.1 °C): 0.906

VAPOR PRESSURE @70°F (21.1 °C): N/A\*      PERCENT VOLATILE BY VOLUME - N/A\*

GAS DENSITY @32°F (0 °C) and 1 atm: 0.072 lbs/ft<sup>3</sup> (1.153 kg/ m<sup>3</sup>)

VAPOR DENSITY (AIR = 1) - Approx. 1

SOLUBILITY IN WATER - Pentane - 11 cm<sup>3</sup>/100 ml (16°C)  
Oxygen - 3.2 cm<sup>3</sup>/100 ml (25°C)  
Carbon Monoxide – 3.5 cm<sup>3</sup>/100 ml (0°C)  
Hydrogen Sulfide – 437 cm<sup>3</sup>/100 ml (0°C)  
Nitrogen - 2.3 cm<sup>3</sup>/100 ml (0°C)

N/A - Not Applicable

**PHYSICAL HAZARD INFORMATION**

**WARNING: DO NOT USE FOR INSTRUMENT CALIBRATION IF CYLINDER TEMPERATURE IS BELOW 40° Fahrenheit or 5° Centigrade, FAILURE TO FOLLOW THIS REQUIREMENT CAN RESULT IN SERIOUS PERSONAL INJURY OR DEATH.**

PHYSICAL HAZARD - Compressed Gas, 500 PSIG at 70°F

CONDITIONS OR MATERIALS TO AVOID – None

FLASH POINT - N/A

LEL - N/A

UEL - N/A

EXTINGUISHING MEDIA - This Gas Mixture Is Not Flammable.

SPECIAL FIRE FIGHTING PROCEDURES - See Next Item

UNUSUAL FIRE AND EXPLOSION HAZARDS - Gas Under Pressure, 500 PSIG at 70°F. Do Not Exceed 120°F. Do not use for instrument calibration if cylinder temperature is below 5°C (40°F); otherwise contents may become explosive. If cylinder is used below this temperature, treat as explosive by allowing cylinder to reach room temperature and vent entire contents in area free of an ignition source. Recalibrate instrument as calibration may be in error. Failure to follow this warning can result in serious personal injury or death.

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### HEALTH HAZARDS

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#### HEALTH HAZARDS –

- Pentane may be irritating to mucous membranes.
- Carbon Monoxide:TC<sub>LO</sub> (human) is 650 ppm/45 minutes and LC<sub>LO</sub> (human) is 5000 ppm/5 minutes IDLH 1200 ppm
- Hydrogen Sulfide: Eye irritant LC<sub>LO</sub> is 800 ppm/5 minutes.

#### SIGNS AND SYMPTOMS OF EXPOSURE –

- Pentane exposure may cause irritation of eyes, nose; nausea, vomiting; headache; dermatitis; dizziness, drowsiness
- Exposure to 500-1000 ppm Carbon monoxide may cause headache, rapid breathing, nausea, weakness, dizziness, and confusion.
- Hydrogen Sulfide is an irritant of the eyes and respiratory tract.

#### PRIMARY ROUTES OF ENTRY - Inhalation

#### TARGET ORGANS –

- Pentane: Eyes, skin, respiratory system, CNS.
- Carbon Monoxide: lungs, blood, tissues.
- Hydrogen Sulfide: Eyes and respiratory tract.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE - -Carbon monoxide burden may aggravate angina pectoris. Pregnant women are reportedly more sensitive than others. Effects of CO exposure are aggravated by heavy labor, heat stress, and high altitude.

#### EXPOSURE LIMITS –

- Pentane(ACGIH 2010), TWA 600 ppm, OSHA PEL 1000 ppm.
- TWA for Carbon Monoxide is 25 ppm.
- TWA for Hydrogen Sulfide is 1 ppm. STEL is 5 ppm.

CARCINOGENICITY DATA - NIOSH RTECS, OSHA, NTP or IARC does not list Component gases.

EMERGENCY & FIRST AID PROCEDURES - Remove From Exposure. Administer Oxygen. Consult Physician Immediately.

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### SAFE HANDLING AND USE

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HYGIENIC PRACTICES - Avoid breathing gas.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT - N/A

PROCEDURES FOR SPILL OR LEAK CLEANUP - Ventilate Area. Avoid Breathing Gas.

WASTE DISPOSAL - Do not puncture or incinerate cylinder. Before discarding cylinder, slowly release contents outdoors with the proper regulator. Dispose of cylinder in accordance with local, state, and federal regulations.

STORAGE - Store in a cool, dry, well-ventilated area. Do not exceed 120°F.

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### CONTROL MEASURES

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PERSONAL PROTECTIVE EQUIPMENT - Due to the limited amount of gas in the cylinder, and the low release rate employed in instrument calibration, respiratory protection is not indicated under conditions of intended use.

ENGINEERING CONTROLS - Mechanical ventilation is suitable.

WORK PRACTICES - Avoid breathing gas. Use in well-ventilated areas. Follow the calibration procedure detailed in the MSA instruction manual provided with the instrument under calibration.

DATE OF PREPARATION - Rev. 7, October 2010

WARNING: This is a hazardous chemical product. By following the directions and warnings provided with this product, the hazards associated with the use of this product can be greatly reduced but never entirely eliminated. Mine Safety Appliances Company makes no warranties, expressed or implied, with respect to this product and EXPRESSLY DISCLAIMS THE WARRANTY OF MERCHANTABILITY AND ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. Users assume all risks in handling, using or storing this product.