

MATERIAL SAFETY DATA SHEET
29 CFR 1910.1200 OSHA Hazard
Communication Rule Format
Chem-Tel 24 Hour Emergency # 1-800-255-3924

MINE SAFETY APPLIANCES COMPANY
1000 Cranberry Woods Drive
Cranberry Township, PA 16066
PHONE (724) 776-8900

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

PRODUCT IDENTITY

LABEL IDENTITY - MSA P/N 10150621 Calibration Check Gas, 60 ppm Carbon Monoxide, 0.375% pentane, 20 ppm Hydrogen Sulfide, 15% Oxygen, Balance Nitrogen

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

ADDITIONAL IDENTITIES - MSA P/N 10150621 calibration gas

FORMULA - $\text{CO} + \text{C}_5\text{H}_{12} + \text{H}_2\text{S} + \text{O}_2 + \text{N}_2$

APPLICABLE CHEMICAL CONTENTS

	<u>%</u>	<u>TWA</u>	<u>OSHA PEL</u>
Carbon Monoxide (CAS 630-08-0, ACGIH 2013)	0.0060	25 ppm	50 ppm TWA
Pentane	0.375%	600 ppm	
Hydrogen Sulfide (CAS 7783-06-4) (ACGIH 2013)	0.0010	1 ppm	STEL 5 ppm
Oxygen (CAS 7782-44-7)	15	None	
Nitrogen (CAS 7727-37-9)	Balance	None**	

** Nitrogen is a simple asphyxiant (ACGIH 2013)

NOTE: Gas under Pressure, 1000 PSIG at 70°F, Approx. 116 Liters Gas at Atmospheric Pressure

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR - Colorless, Malodorous Gas

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/ft³ (1.153 kg/ m³)

SOLUBILITY IN WATER - Carbon Monoxide -3.5 cm³/100 ml (0°C)
Pentane - 9 cm³/100 ml (20°C)
Hydrogen Sulfide - 437 cm³/100 ml (0°C)
Oxygen - 3.2 cm³/100 ml (25°C)
Nitrogen - 2.3 cm³/100 ml (0°C)

**N/A - Not Applicable

PHYSICAL HAZARD INFORMATION

PHYSICAL HAZARD - Compressed gas, 1000 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, 1000 PSIG at 70°F. Do not exceed 120°F.

HEALTH HAZARDS

ROUTE OF ENTRY:				
Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	No	Yes	Yes	No
HEALTH EFFECTS:				
Exposure Limits	Irritant	Sensitization	Reproductive Hazard	Mutagen
Yes	Yes	No	Yes	No
EYE EFFECTS:				
Hydrogen sulfide can cause eyes to become scratchy, irritated and even teary. Above 50 ppm of hydrogen sulfide, there is an intense tearing blurring of vision, and pain when looking at light.				
SKIN EFFECTS:				
Over-exposure to carbon monoxide can be indicated by the lips and fingernails turning bright red. High concentrations of hydrogen sulfide may also be irritating to the skin.				
INGESTION EFFECTS:				
Ingestion unlikely. Gas at room temperature.				
INHALATION EFFECTS:				
Due to the small size of this cylinder, no unusual health effects from over-exposure are anticipated under routine circumstances of use. Over-exposure to hydrogen sulfide can cause dizziness, headache, and nausea. Exhilaration, dizziness and headache can occur when over-exposed to Pentane. Long term exposure to Pentane can cause chronic neurological disorders causing damage to the nerves in the hands and feet. At 12- 16% Oxygen, breathing and pulse rate is increased, muscular coordination is slightly disturbed.				

NFPA HAZARD CODES

Health: 3
 Flammability: 0
 Reactivity: 0

HMIS HAZARD CODES

Health: 3
 Flammability: 0
 Reactivity: 0

RATING SYSTEM

0= No Hazard
 1= Slight Hazard
 2= Moderate Hazard
 3= Serious Hazard
 4= Severe Hazard

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 Carbon monoxide exposure are aggravated by heavy labor, heat stress and high altitude.

EXPOSURE LIMITS - Pentane 600 ppm (ACGIH 2013). - Carbon Monoxide 25 ppm (ACGIH 2013), OSHA (PEL) for carbon monoxide is 50 ppm. Hydrogen sulfide TWA= 1 ppm, STEL=5 ppm.

CARCINOGENICITY DATA - Component gases are not listed by NIOSH RTECS, OSHA, NTP or IARC.

EMERGENCY AND FIRST AID PROCEDURES –**EYES:**

PERSONS WITH POTENTIAL EXPOSURE SHOULD NOT WEAR CONTACT LENSES. Flush contaminated eyes with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes. Seek immediate medical attention.

SKIN:

Remove contaminated clothing as rapidly as possible. Flush affected area with copious quantities of water. Seek immediate medical attention.

INGESTION:

Not required

INHALATION:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH THE SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

SAFE HANDLING AND USE

HYGIENIC PRACTICES - Avoid breathing gas.

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

PROCEDURES FOR SPILL OR LEAK CLEANUP - Ventilate area.

WASTE DISPOSAL - Do not puncture or incinerate cylinder. Before discarding cylinder, slowly release contents to a safe exhaust. 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.

CONTROL MEASURES

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. 0, November 2013

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.