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

PRODUCT IDENTITY

LABEL IDENTITY - MSA P/N 10059149 Calibration Check Gas, 300 ppm Carbon Monoxide, 1.45 % Methane, 2.5% Carbon dioxide, 15% Oxygen, Balance Nitrogen

CHEMICAL NAME - Carbon monoxide, methane, oxygen, carbon dioxide, nitrogen mixture

ADDITIONAL IDENTITIES - MSA P/N 10059149 Calibration Gas

FORMULA - $CO + CH_4 + O_2 + CO_2 + N_2$

APPLICABLE CHEMICAL CONTENTS

	%	TWA	OSHA
Carbon Monoxide (CAS 630-08-0) (NIOSH REL 2005)	0.03	35 ppm	PEL TWA 50ppm
Methane (CAS 74-82-8)	1.45	1000 ppm*	
Oxygen (CAS 7782-44-7)	15	None	
Carbon Dioxide (CAS 124-38-9) (NIOSH REL 2004)	2.5	5000 ppm	PEL TWA 5000ppm
Nitrogen (CAS 7727-37-9)	Balance	None	

*Methane as an alkane (ACGIH 2005)

NOTE: Gas under pressure, 1000 PSIG at 70°F, Approx. 100 Liters Gas at Atmospheric Pressure

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR - Colorless, odorless gas
BOILING POINT - N/A** SPECIFIC GRAVITY (H_2O = 1) - N/A**
VAPOR PRESSURE - N/A** PERCENT VOLATILE BY VOLUME - N/A**
VAPOR DENSITY (AIR = 1) - Approx. 1
SOLUBILITY IN WATER - Carbon monoxide -3.5 cm^3/100 ml (0°C)
Methane - 9 cm^3/100 ml (20°C)
Carbon dioxide - 179 cm^3/100 ml (0°C)
Oxygen - 3.2 cm^3/100 ml (25°C)
Nitrogen - 2.3 cm^3/100 ml (0°C)

N/A** - Not Applicable

PHYSICAL HAZARD INFORMATION

PHYSICAL HAZARD - Compressed gas, 1000 PSIG at 70°F

CONDITIONS OR MATERIALS TO AVOID - Avoid caustic substances

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

HEALTH HAZARDS - Methane as an alkane (ACGIH 2005).
Carbon monoxide: TC_{LO} human is 650 ppm/45 minutes and the IDLH for carbon monoxide is 1200ppm.
Carbon dioxide is a simple asphyxiant with physiological effects at high concentrations, LC_{LO} (human) 9pph/5minutes, IDLH for Carbon dioxide is 40,000 ppm. Nitrogen is an asphyxiant.

SIGNS AND SYMPTOMS OF EXPOSURE – Methane as an alkane exposure to 1000 ppm may cause CNS depression and cardiac sensitization. Exposure to 500-1000 ppm carbon monoxide may cause headache, rapid breathing, nausea, weakness, dizziness and confusion. Carbon dioxide at concentrations 2-10% can cause dizziness, nausea, headache, mental confusion, increased blood pressure and respiratory rate.

PRIMARY ROUTES OF ENTRY - Inhalation

TARGET ORGANS – Methane as an alkane: heart, CNS. Carbon monoxide: Lungs, Blood, and Tissues. Carbon monoxide at toxic concentrations causes tissue hypoxia (lack of oxygen) by preventing blood from transporting sufficient oxygen. Carbon dioxide: lungs, CNS and eyes.

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. Carbon dioxide may aggravate acute or chronic respiratory conditions. Over exposure to carbon dioxide may aggravate eye disorders and CNS conditions

EXPOSURE LIMITS – Methane as an alkane: 1000 ppm TWA (ACGIH 2005)
Carbon Monoxide: 35 ppm (NIOSH REL) Ceiling 200ppm; OSHA PEL TWA 50 ppm.
Carbon Dioxide: 5000 ppm (NIOSH REL) STEL 30,000ppm, OSHA PEL TWA 5000 ppm.

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

EMERGENCY AND FIRST AID PROCEDURES - Remove from exposure. If breathing has stopped, give artificial respiration. Administer oxygen. Consult a physician immediately

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. 2, July 2006

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.