

Distributed by  
**Rainbow Technology Corp.**  
Tel: 1.800.637.6047 / 205.733.0333  
RTC Product #75264

**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**  
P.O. Box 426  
Pittsburgh, PA 15230  
PHONE (412) 967-3000

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

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**PRODUCT IDENTITY**

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LABEL IDENTITY - MSA P/N 478191 Calibration Check Gas, 60 ppm Carbon Monoxide, 1.45% Methane, 15% Oxygen, Balance Nitrogen

CHEMICAL NAME - Carbon Monoxide, Methane, Oxygen, Nitrogen Mixture

ADDITIONAL IDENTITIES - MSA P/N 478191 calibration gas

FORMULA -  $CO + CH_4 + O_2 + N_2$

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**APPLICABLE CHEMICAL CONTENTS**

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	<u>%</u>	<u>TWA</u>
Carbon Monoxide (CAS 630-08-0, ACGIH 2005)	0.0060	25 ppm
Methane (CAS 74-82-8)	1.45	1000 ppm *
Oxygen (CAS 7782-44-7)	15	None
Nitrogen (CAS 7727-37-9)	Balance	None**

\*Methane as an alkane (ACGIH 2005)

\*\* Nitrogen is a simple asphyxiant ( ACGIH 2005)

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

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**PHYSICAL AND CHEMICAL PROPERTIES**

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APPEARANCE AND ODOR - Colorless, Odorless Gas

BOILING POINT - N/A\*\*

VAPOR PRESSURE - N/A

VAPOR DENSITY (AIR = 1) - Approx. 1

SOLUBILITY IN WATER - Carbon Monoxide -3.5 cm<sup>3</sup>/100 ml (0°C)

Methane - 9 cm<sup>3</sup>/100 ml (20°C)

Oxygen - 3.2 cm<sup>3</sup>/100 ml (25°C)

Nitrogen - 2.3 cm<sup>3</sup>/100 ml (0°C)

SPECIFIC GRAVITY (H<sub>2</sub>O = 1) - N/A

PERCENT VOLATILE BY VOLUME - N/A

\*\*N/A - Not Applicable

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**PHYSICAL HAZARD INFORMATION**

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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.

# Safety Data Sheet (SDS)

MSA P/N 478191

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## HEALTH HAZARDS

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HEALTH HAZARDS - Methane as an alkane TWA 1000 ppm (ACGIH 2005). Carbon monoxide TC<sub>LO</sub> (Human) is reportedly 650 ppm/45 minutes; LC<sub>10</sub> (Human) 5000 ppm/5 minutes.

SIGNS AND SYMPTOMS OF EXPOSURE – Methane as an alkane CNS depression; cardiac sensitization. Exposure to 500-1000 ppm carbon monoxide may cause headache, rapid breathing, nausea, weakness, dizziness and confusion.

PRIMARY ROUTES OF ENTRY - Inhalation

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

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 - Methane as an alkane TWA 1000 ppm.(ACGIH 2005). Carbon Monoxide 25 ppm (ACGIH 2005). OSHA CO TWA=35 ppm.

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

EMERGENCY AND 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.

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.

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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. 10, August 2005

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.