

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

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

PRODUCT IDENTITY

LABEL IDENTITY - MSA P/N 10058172 Calibration Check Gas, 60 ppm Carbon Monoxide, 2.5% Methane, 15% Oxygen, 10 ppm Nitrogen dioxide, Balance Nitrogen

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

ADDITIONAL IDENTITIES - MSA P/N 10058172 calibration gas

FORMULA - $\text{CO} + \text{CH}_4 + \text{O}_2 + \text{NO}_2 + \text{N}_2$

APPLICABLE CHEMICAL CONTENTS

	<u>%</u>	<u>TWA</u>	<u>STEL</u>	<u>OSHA</u>
Carbon Monoxide (CAS 630-08-0) (ACGIH 2010)	0.0060	25 ppm		PEL 50 ppm
Methane (CAS 74-82-8)	2.5	1000 ppm*		
Oxygen (CAS 7782-44-7)	15	None		
Nitrogen dioxide (CAS 10102-44-0) (ACGIH 2010)	0.001	3ppm	5ppm	PEL C 5ppm
Nitrogen (CAS 7727-37-9)	Balance	None		

*Methane as an alkane (ACGIH 2010)

NOTE: Gas under pressure, 500 PSIG at 70°F, Approx. 34 Liters Gas at Atmospheric Pressure

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR - Colorless, pungent acrid 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/ft³ (1.153 kg/ m³)

VAPOR DENSITY (AIR = 1) - Approx. 1

SOLUBILITY IN WATER - Carbon Monoxide -3.5 cm³/100 ml (0°C)

Methane - 9-cm³/100 ml (20°C)

Oxygen - 3.2 cm³/100 ml (25°C)

Nitrogen Dioxide - reacts

Nitrogen - 2.3 cm³/100 ml (0°C)

*N/A - Not Applicable

PHYSICAL HAZARD INFORMATION

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.

HEALTH HAZARDS

HEALTH HAZARDS –

- Methane as an alkane cardiac sensitivity and CNS impairment at 1000 ppm.
- Carbon monoxide TCLO (Human) is reportedly 650 ppm/45 minutes; LC_{LO} (Human) 5000 ppm/5 minutes.
- Gaseous Nitrogen Dioxide is a severe pulmonary irritant. Nitrogen dioxide may increase bronchoconstriction in asthmatics at concentrations as low as 0.1 ppm. Overexposure produces pulmonary edema, which may occur within one or two hours and may re-occur with increased severity sometime later. The Immediately Dangerous to Life and Health (IDLH) concentration is 20 ppm.

Note: While Nitrogen Dioxide is a highly toxic and irritating gas (Emergency Exposure limits 60 minute 10ppm) the small quantity available from a calibration cylinder (34 liters of 10 ppm Nitrogen Dioxide in air or approx. 0.6 milligram Nitrogen Dioxide) is insufficient to sustain a material volume above the TLV if accidentally released to ambient air. Content of one cylinder diluted by 1 cubic meter of ambient air would yield 0.35 ppm Nitrogen Dioxide. It would require simultaneous release of fourteen (14) P/N 10058172 calibration cylinders (1.8 milligrams Nitrogen Dioxide) to produce the STEL 5 ppm, in a cubic meter of air.

SIGNS AND SYMPTOMS OF EXPOSURE - Irritation of respiratory tract and eyes, cough, frothy sputum. The following effects are reportedly expected for a 60-minute exposure.

100 ppm -	pulmonary edema and death
50 ppm -	pulmonary edema, possible lesions in lungs, moderate irritation of eyes and nose
25 ppm -	respiratory irritation, chest pain

SIGNS AND SYMPTOMS OF EXPOSURE –

- Methane as an alkane affects the central nervous system, and heart.
- Carbon monoxide exposure as low as 500-1000 ppm CO may cause headache, rapid breathing, nausea, weakness, dizziness and confusion. Carbon monoxide: Lungs, Blood, Tissues. Carbon monoxide at toxic concentrations causes tissue hypoxia (lack of oxygen) by preventing blood from transporting sufficient oxygen.
- Nitrogen dioxide exposure Irritation of eyes, nose, throat; cough, mucoid frothy sputum, decreased pulmonary function, chronic bronchitis, dyspnea (breathing difficulty); chest pain; pulmonary edema, cyanosis, tachypnea, tachycardia; eye, skin burns; dermatitis.

PRIMARY ROUTES OF ENTRY - Inhalation, ingestion, skin and or eye contact.

TARGET ORGANS – Methane: Lungs, blood, and tissues.

Carbon monoxide at toxic concentrations causes tissue hypoxia (lack of oxygen) by preventing blood from transporting sufficient oxygen.

Nitrogen dioxide eyes, respiratory system, cardiovascular system.

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

EXPOSURE LIMITS – Methane as an alkane: 1000 ppm.

Carbon monoxide: 25 ppm (ACGIH 2010). OSHA PEL 50ppm.

Nitrogen dioxide: TWA 3ppm, STEL 5ppm (ACGIH 2010) OSHA PEL C5ppm.

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

EMERGENCY AND FIRST AID PROCEDURES - Remove from exposure. Administer oxygen. Consult 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. 3, 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.