

This product contains carbon monoxide, methane, nitrogen dioxide, 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 10058171 Calibration Check Gas, 60 ppm Carbon Monoxide, 2.5% Methane, 10 ppm Nitrogen dioxide, 15% Oxygen, Balance Nitrogen

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

ADDITIONAL IDENTITIES - MSA P/N 10058171 calibration gas

FORMULA -  $CO + CH_4 + NO_2 + O_2 + N_2$

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**APPLICABLE CHEMICAL CONTENTS**

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	<u>%</u>	<u>TWA</u>	<u>STEL</u>	<u>OSHA</u>
Carbon Monoxide (CAS 630-08-0) (ACGIH 2009)	0.0060	25 ppm		PEL 50 ppm
Methane (CAS 74-82-8)	2.5	1000 ppm*		
Nitrogen dioxide (CAS 10102-44-0) (ACGIH 2009)	0.001	3 ppm	5ppm	1ppm PEL
Oxygen (7782-44-7)	15%	None		
Nitrogen (CAS 7727-37-9)	Balance	None		

\*Methane as an alkane (ACGIH 2009)

NOTE: Gas under pressure, 500 PSIG at 70°F, Approx. 58 liters gas at atmospheric pressure

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**PHYSICAL AND CHEMICAL PROPERTIES**

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APPEARANCE AND ODOR – Colorless gas with a pungent acrid odor.

BOILING POINT - N/A\*

SPECIFIC GRAVITY (H<sub>2</sub>O = 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<sup>3</sup>/100 ml (0°C)

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

Nitrogen Dioxide – reacts

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

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

\*N/A - Not Applicable

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**PHYSICAL HAZARD INFORMATION**

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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.

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### HEALTH HAZARDS

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HEALTH HAZARDS - Methane as an alkane 1000 ppm (ACGIH 2009). Carbon monoxide TC<sub>LO</sub> human is 650 ppm/45 minutes and the IDLH for carbon monoxide is 1200ppm. Nitrogen dioxide is a severe pulmonary irritant. 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 NO<sub>2</sub> is a highly toxic and irritating gas (Human LC<sub>LO</sub>200 ppm/1 minute) the small quantity available from a calibration cylinder (58 liters of 10 ppm NO<sub>2</sub> in air or approx. 1.1 milligram NO<sub>2</sub>) 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 0.58 ppm NO<sub>2</sub> < STEL 1 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 - Exposure to methane at 1000 ppm may cause cardiac sensitization and CNS impairment. Exposure to 500-1000 ppm carbon monoxide may cause headache, rapid breathing, nausea, weakness, dizziness and confusion. Exposure to 10- 20 ppm Nitrogen dioxide has been middle irritating.

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

TARGET ORGANS – Methane: Heart and 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. Nitrogen dioxide lungs, mucous membranes.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE - Methane exposure may aggravate CNS and heart conditions. 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 TWA (ACGIH 2009). Carbon Monoxide 25 ppm TWA, (ACGIH 2009); OSHA PEL TWA 50 ppm. Nitrogen dioxide 3 ppm TWA; 5 ppm STEL (ACGIH 2009); 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.

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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. 2, May 2009

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.