

**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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**Cranberry Township, PA 16066**  
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This product contains 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 10150599 Calibration Check Gas, 10 ppm Nitrogen Dioxide in Air

CHEMICAL NAME - Nitrogen Dioxide, Oxygen, Nitrogen Mixture

ADDITIONAL IDENTITIES - MSA P/N 10150599 Calibration Gas

FORMULA - NO<sub>2</sub> in Air

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**APPLICABLE CHEMICAL CONTENTS**

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	<u>%</u>	<u>TWA</u>	<u>OSHA STEL</u>
Nitrogen Dioxide (CAS 10102-44-0)	.0010	0.2 ppm (ACGIH 2013)	5 ppm Ceiling
Air	Balance	None	

NOTE: Gas under pressure, 1000 PSIG at 70°F, Approx. 116 liters gas at atmospheric pressure.

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**PHYSICAL AND CHEMICAL PROPERTIES**

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APPEARANCE AND ODOR - Red gas at high concentrations but colorless at 10 ppm; 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/ft<sup>3</sup> (1.153 kg/ m<sup>3</sup>)

SOLUBILITY IN WATER - 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, 1000 PSIG at 70°F

CONDITIONS OR MATERIALS TO AVOID - None

FLASH POINT - Not Applicable      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** - Gaseous 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 50 ppm.

Note: While Nitrogen Dioxide is a highly toxic and irritating gas (Human LC<sub>LO</sub> 200 ppm/1 minute) the small quantity available from a calibration cylinder (116 liters of 10 ppm Nitrogen Dioxide in air or approx. 2.2 milligram Nitrogen Dioxide) is not sufficient to sustain a material volume above the TLV if accidentally released to ambient air. Content of one cylinder diluted by 23.7 cubic meter of ambient air (equivalent to a room size of 10 x 12 x7) would yield 0.05 ppm Nitrogen Dioxide.

**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

**PRIMARY ROUTES OF ENTRY** - inhalation, eyes

**TARGET ORGANS** - lungs eyes

**MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE** - No Information

**EXPOSURE LIMITS** - ACGIH 2013 TLV-TWA Nitrogen Dioxide 0.2 ppm, OSHA STEL 5 ppm ceiling; NIOSH 1 ppm/15 minutes recommended ceiling

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

**MUTATION DATA** - References in RTECS

**REPRODUCTIVE EFFECTS DATA** - References in RTECS

**EMERGENCY AND FIRST AID PROCEDURES** - Overexposure to Nitrogen Dioxide is not indicated with intended product use due to the limited quantity of NO<sub>2</sub> contained in an individual cylinder of P/N 10150599 (2.2 milligram NO<sub>2</sub>). Nevertheless, first aid procedure for Nitrogen Dioxide vapor is presented should overexposure somehow occur.

**FIRST AID** - Remove the victim to fresh air. Apply artificial respiration if the victim is not breathing. Administer oxygen if breathing is difficult. Get medical attention immediately, even if the victim is not complaining of discomfort. Immediate medical attention is advisable in all cases where appreciable inhalation of Nitrogen Dioxide is believed to have occurred, as pulmonary edema may develop.

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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. Avoid breathing gas.

WASTE DISPOSAL - NIOSH RTECS, IARC, NTP or OSHA does not list component gases.

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. 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.