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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>50</sub> 200 ppm/1 minute) the small quantity available from a calibration cylinder (58 liters of 10 ppm nitrogen dioxide in air or approx. 1.1 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 0.58 ppm NO<sub>2</sub>. It would require simultaneous release of five P/N 10028068 calibration cylinders (5.5 milligrams nitrogen dioxide) to produce the TWA 3 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

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

**TARGET ORGANS** - lungs eyes

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

**EXPOSURE LIMITS** – (ACGIH 2007) TWA nitrogen dioxide 3 ppm, STEL 5 ppm; OSHA STEL 5 ppm(C)

**CARCINOGENICITY DATA** - Not listed by RTECS, OSHA, NTP or IARC.

**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 nitrogen dioxide contained in an individual cylinder of P/N 10028068 (1.1 milligram nitrogen dioxide). 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. Give 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 - Do not puncture or incinerate cylinder. Before discarding cylinder, slowly release contents to a safe exhaust.

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. 1, August 2007

**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.