

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
1000 Cranberry Woods Drive
Cranberry Township, PA 16066
PHONE (724) 776-8900

This product contains phosphine and nitrogen, substances subject to the Pennsylvania Worker and Community Right-To-Know Act.

PRODUCT IDENTITY

LABEL IDENTITY - MSA P/N 710533 Calibration Check Gas, 0.5 ppm phosphine in Nitrogen

CHEMICAL NAME - Phosphine, nitrogen mixture

ADDITIONAL IDENTITIES - MSA P/N 710533 Calibration Gas

FORMULA - PH_3 in N_2

APPLICABLE CHEMICAL CONTENTS

	contents	TWA	STEL
Phosphine (CAS 7803-51-2)(ACGIH 2013)	0.5 ppm	0.3 ppm	1.0 ppm
Nitrogen (CAS 7727-37-9)	Balance None		

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

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR - Colorless gas with a disagreeable characteristic fishy, garlic-like 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)

SOLUBILITY IN WATER - PH_3 - 25 cm³/100 ml (0°C)
 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 - Air, oxygen, chlorine, fluorine, and all oxidizing agents.

FLASH POINT -N/A LEL - N/A UEL - N/A

EXTINGUISHING MEDIA -This calibration 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 - Phosphine is an extremely toxic gaseous compound. It is an irritant to eyes and airway. It is a central nervous system depressant. LC_{LO} (Inhalation- Human) 1000 ppm . LC₅₀ (Inhalation –Rat) 10 ppm/4 H. LC_{LO} (Inhalation- Mammal) 1000 ppm/5 M.

SIGNS AND SYMPTOMS OF EXPOSURE –

Note: This calibration cylinder (58 liters of 0.5 ppm Phosphine in nitrogen or approx. 0.04 milligram Phosphine) is insufficient to sustain a material volume above the TWA 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 0.001 ppm Phosphine. Odor threshold is 0.14 ppm phosphine.

ACUTE: Due to the small size of the individual cylinder of this gas mixture, no unusual health effects from exposure to the product are anticipated under routine circumstances of use. Phosphine (a component of this gas mixture) is an extremely toxic gas; even brief over-exposures to relatively low doses may have significant health consequences. Effects of an acute over-exposure include central nervous system disorders (i.e. headaches, tremors), lung problems, abdominal pains, effects on the heart. Contact with the skin or eyes with Phosphine in the presence of moisture can cause irritation, due to the formation of phosphoric acid.

CHRONIC: Effects of chronic low level exposures to the Phosphine component of this gas mixture may result in anemia, bronchitis, gastrointestinal disorders, and visual, speech, and motor disturbances. Refer to Section 11 (Toxicology Information) for additional data. Chronic exposure to oxygen-deficient atmospheres (below 18% oxygen in air) may affect the heart and nervous system.

TARGET ORGANS: ACUTE: Respiratory system, central nervous system, cardiac system, skin, eyes.
CHRONIC: Blood system, respiratory

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE –

Any respiratory disorder, heart condition, or central nervous system condition, may be aggravated by over-exposure to Phosphine. Additionally, skin and eye conditions may be aggravated by Phosphine exposures.

EXPOSURE LIMITS - ACGIH 2013: TLV-TWA PH₃ 0.3 ppm, STEL 1 ppm.

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

EMERGENCY AND FIRST AID PROCEDURES –

Prompt medical attention is mandatory in all cases of overexposure to phosphine. Rescue personnel should be equipped with self-contained breathing apparatus and be cognizant of extreme fire and explosion Hazard.

Eye: Immediately and thoroughly flush the eyes with large amounts of water for at least 15 minutes, occasionally lifting the lower and upper eyelids. If irritation, pain, swelling, lacrimation, or photophobia persists, get medical attention as soon as possible.

Skin: Immediately and thoroughly wash contaminated skin with soap and water. Get medical attention as soon as possible.

Inhalation: Move the exposed person to fresh air at once. If breathing has stopped, give artificial respiration. Get medical attention as soon as possible.

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.

TRANSPORTATION INFORMATION

THIS GAS MIXTURE IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Compressed gases, n.o.s. (Phosphine, Nitrogen)
HAZARD CLASS NUMBER and DESCRIPTION: 2.2 (Non-Flammable Gas)
UN IDENTIFICATION NUMBER: UN 1956
PACKING GROUP: Not applicable.
DOT LABEL(S) REQUIRED: Non-Flammable Gas
NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2012): 126
MARINE POLLUTANT: The components of this gas mixture are not classified by the DOT as Marine Pollutants (as defined by 49 CFR 172.101, Appendix B).

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

Note: Cylinders ship in a strong outer carton (outer package). Pertinent shipping information goes on the outside of the outer package.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This gas is considered as Dangerous Goods, per regulations of Transport Canada.

PROPER SHIPPING NAME: Compressed gases, n.o.s. (Phosphine, Nitrogen)
HAZARD CLASS NUMBER and DESCRIPTION: 2.2 (Non-Flammable Gas)
UN IDENTIFICATION NUMBER: UN 1956
PACKING GROUP: Not Applicable
HAZARD LABEL: Class 2.2 (Non-Flammable Gas)
SPECIAL PROVISIONS: None

DATE OF PREPARATION - Rev. 8, 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.