

Precision Gas Products Inc.

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Nitric Oxide in Nitrogen

0.0001% to 1%

MATERIAL SAFETY DATA SHEET

Identification

Revision Date 01-01-09

Products Name: NITRIC OXIDE IN NITROGEN 0.0001% TO 1%

Chemical Family: Gas Mixture

Chemical formula: NO in Nitrogen

MSDS identification Code/ Number: MSDS 166N

Composition/ Information on Ingredients

Concentration
Percent by Weight
0.0001 to 1.0

Ingredient Name

NITRIC OXIDE CAS Number: 10102-43-9

Exposure Limits

- ACGIH TLV-TWA: 25 ppm
- IDLH: 100 ppm
- OSHA PEL-TWA: 25 ppm (final)

NITROGEN Simple Asphyxiant –Maintain oxygen levels above 19.5%

99.995% to 99.998%

CAS Number: 7727-37-9

Hazard Identification

No data given

First Aid Measures

Eyes

Immediately flush with tepid water

Inhalation

Prompt medical attention is mandatory in all cases of overexposure. Rescue personnel should be equipped with self-contained breathing apparatus. Conscious persons should be CARRIED (not assisted) to an uncontaminated area and inhale fresh air with supplemental oxygen. Keep the patient warm, quiet and under competent medical observation until the danger of delayed pulmonary edema has passed (at least 72 hours). Any physical exertion during this period should be discouraged as it may increase the severity of the pulmonary edema or chemical pneumonitis. Bed rest is indicated. Unconscious persons should be moved to an uncontaminated area, and if breathing has stopped, administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Fire Fighting Measures

- Fire and Explosion Hazards: Nitric oxide is nonflammable but will support combustion.
- Extinguishing Media: Nonflammable, inert gas.
- Fire Fighting Instructions: None
- Electrical Classification: Nonhazardous.

Accidental Release Measures

Evacuate all personnel from affected areas. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC location for emergency assistance.

Handling and Storage

- **Handling and Storage Precautions**

Use only in well – ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure-reducing regulator when connecting cylinder to lower pressure (<3000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous backflow into the system.

Protect cylinders from physical damage. Store in cool, dry, well – ventilated area of noncombustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Use a “first in, first out” inventory system to prevent full cylinders being stored for excessive periods of time. Post “NO SMOKING OR OPEN FLAMES” signs in the storage area or use area. There should be no sources of ignition in the storage or use area.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, asphyxiation or toxic exposure.

Exposure Controls/Personal Protection

Ventilation: Use local exhaust to prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 19.5 molar percent and to prevent NO accumulation above the exposure limit.

Eye/Face Protection: Safety goggles or glasses.

Skin Protection: Protective gloves of any material (rubber or Teflon ®)

Respiratory Protection: Self-contained breathing apparatus should be available for emergency use.

Other/General Protection: Safety shoes and eyewash

Physical & Chemical Properties

Appearance: A colorless gas.

Basic Physical Properties

Odor: Odorless gas.

Solubility (H2O): Very slightly soluble.

Stability & Reactivity

Stability: Stable.

Incompatible Materials: Oxidizing agents, halides, hydrocarbons and oxygen. Reacts vigorously with fluorine, fluorine oxides and chlorine in the presence of moisture.

Conditions to Avoid: None.

Hazardous Decomposition Products: NO oxidizers in air to form nitrogen dioxide, which is extremely reactive and a strong oxidizer. Upon contact with moisture and oxygen, it produces nitrous and nitric acids.

Conditions to Avoid (Polymerization): None

Hazardous Polymerization: Will not occur.

Toxicological Information

Eye Effects: Irritation of the eyes in the moderate concentrations.

Skin Effects: None

Acute Oral Effects: None

Acute Inhalation Effects: Nitrogen is classified as a simple asphyxiant. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure.

High concentrations so as to exclude an adequate supply of oxygen to the lungs causes dizziness, deeper breathing due to air hunger, possible nausea and eventual unconsciousness. Nitrogen is nontoxic but the liberation of a large amount in a confined area could displace the amount of oxygen in air necessary to support life. Nitric Oxide is a Poison Inhalation Hazard Zone B, Vapors are a strong irritant to the pulmonary tract. Initial symptoms of inhalation may be moderate and include irritation to the throat, tightness of the chest, headache, nausea and gradual loss of strength. Severe symptoms may be delayed (possible for several hours) and include cyanosis, increased difficulty in breathing, irregular respiration, lassitude and possible eventual death due to pulmonary edema in untreated cases. Nitric Oxide vapor is highly toxic and hazardous because of its ability to cause delayed chemical pneumonitis and pulmonary edema. Chronic or repeated exposure may cause permanent decrements in pulmonary function (Silo Filler's Disease). The absence of marked acute irritation of nitric oxide limits its warning properties.

Miscellaneous Toxicological Information

Carcinogenicity – NTP: No IARC: No OSHA: No

Ecological Information

No data given

Disposal Considerations

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secure and valve protection cap in place to Precision Gas Products for proper disposal.

Transport Information

Proper Shipping Name: Compressed Gas, N.O.S., (Nitrogen, Nitric Oxide)
 Hazardous Class: 2.2
 CT (DOT) Identification Number: UN 1956
 CT (DOT) Shipping Label: Nonflammable Gas

Regulatory Information

SARA Title III Notifications and Information

SARA Title III – Hazard Class: Sudden Release of Pressure Hazard

Other Information

Hazard Rating	Health:	1 High
	Fire:	0 Negligible
	Reactivity:	0 Negligible

MSDS Identification Code/Number: MSDS 166N

Reference Documentation

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipments of a compressed gas cylinder, which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

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