

# MATERIAL SAFETY DATA SHEET

## SECTION 1. PRODUCT IDENTIFICATION

**PRODUCT NAME:** Nitrogen, compressed

**CHEMICAL NAME:** Nitrogen

**FORMULA:** N<sub>2</sub>

**SYNONYMS:** Nitrogen gas, Gaseous Nitrogen, GAN

**MANUFACTURER:** Air Products and Chemicals, Inc.

7201 Hamilton Boulevard

Allentown, PA 18195 - 1501

**PRODUCT INFORMATION:** 1-800-752-1597

**MSDS NUMBER:** 1011 **REVISION:** 5

**REVISION DATE:** March 1994 **REVIEW DATE:** August 1997

## SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Nitrogen is sold as pure product > 99%.

**CAS NUMBER:** 7727-37-9

**EXPOSURE LIMITS:**

**OSHA:** Not established **ACGIH:** Simple asphyxiant **NIOSH:** Not established

## SECTION 3. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

Nitrogen is a nontoxic, odorless, colorless, nonflammable compressed gas stored in cylinders at high pressure. It can cause rapid suffocation when concentrations are sufficient to reduce oxygen levels below 19.5%. Self Contained Breathing Apparatus (SCBA) may be required.

### EMERGENCY TELEPHONE NUMBERS

800-523-9374 Continental U.S. , Canada and Puerto Rico

610-481-7711 other locations

**POTENTIAL HEALTH EFFECTS INFORMATION:**

**INHALATION:** Simple asphyxiant. Nitrogen is nontoxic, but may cause suffocation by displacing the oxygen in air. Lack of sufficient oxygen can cause serious injury or death.

**EYE CONTACT:** No adverse effect.

**SKIN CONTACT:** No adverse effect.

**EXPOSURE INFORMATION:**

**ROUTE OF ENTRY:** Inhalation

**TARGET ORGANS:** None

**EFFECT:** Asphyxiation (suffocation)

**SYMPTOMS:** Exposure to an oxygen deficient atmosphere (<19.5%) may cause dizziness, drowsiness, nausea, vomiting, excess salivation, diminished mental alertness, loss of consciousness and death. Exposure to atmospheres containing 8-10% or less oxygen will bring about unconsciousness without warning and so quickly that the individuals cannot help themselves.

**MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:** None

**CARCINOGENIC POTENTIAL:** Nitrogen is not listed as a carcinogen or potential carcinogen by NTP, IARC, or OSHA .

## SECTION 4. FIRST AID

**INHALATION:** Persons suffering from lack of oxygen should be moved to fresh air. If victim is not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Obtain prompt medical attention.

**EYE CONTACT:** Not applicable.

**SKIN CONTACT:** Not applicable.

## SECTION 5. FIRE AND EXPLOSION

**FLASH POINT: AUTOIGNITION: FLAMMABLE LIMITS:**

Not applicable Nonflammable Nonflammable

**EXTINGUISHING MEDIA:** Nitrogen is nonflammable and does not support combustion. Use extinguishing media appropriate for the surrounding fire.

**HAZARDOUS COMBUSTION PRODUCTS:** None

**SPECIAL FIRE FIGHTING INSTRUCTIONS:** Nitrogen is a simple asphyxiant. If possible, remove nitrogen cylinders from fire area or cool with water. SCBA may be required by rescue workers.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Upon exposure to intense heat or flame cylinder may vent rapidly and/or rupture violently. Most cylinders are designed to vent contents when exposed to elevated temperatures. Pressure in a container can build up due to heat and it may rupture if pressure relief devices should fail to function.

#### SECTION 6. ACCIDENTAL RELEASE MEASURES

Evacuate all personnel from affected area. Increase ventilation to release area and monitor oxygen level. Use appropriate protective equipment (SCBA). If leak is from container or its valve, call the Air Products emergency telephone number. If leak is in user's system close cylinder valve and vent pressure before attempting repairs.

#### SECTION 7. HANDLING AND STORAGE

**STORAGE:** Cylinders should be stored upright in a well-ventilated, secure area, protected from the weather. Storage area temperatures should not exceed 125 °F (52 °C) and area should be free of combustible materials. Storage should be away from heavily traveled areas and emergency exits. Avoid areas where salt or other corrosive materials are present. Valve protection caps and valve outlet seals should remain on cylinders not connected for use. Separate full from empty cylinders. Avoid excessive inventory and storage time. Use a first-in first-out system. Keep good inventory records.

**HANDLING:** Do not drag, roll, or slide cylinder. Use a suitable handtruck designed for cylinder movement. Never attempt to lift a cylinder by its cap. Secure cylinders at all times while in use. Use a pressure reducing regulator or separate control valve to safely discharge gas from cylinder. Use a check valve to prevent reverse flow into cylinder. Do not overheat cylinder to increase pressure or discharge rate. If user experiences any difficulty operating cylinder valve, discontinue use and contact supplier. Never insert an object (e.g., wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may

damage valve causing a leak to occur. Use a special cap wrench or adjustable strap-wrench to remove over-tight or rusted caps.

Nitrogen is compatible with all common materials of construction. Pressure requirements should be considered when selecting materials and designing systems.

**SPECIAL REQUIREMENTS:** Always store and handle compressed gases in accordance with Compressed Gas Association, Inc. (ph. 703-412-0900) pamphlet CGA P-1, *Safe Handling of Compressed Gases in Containers*. Local regulations may require specific equipment for storage or use.

**CAUTION:** Users of nitrogen must be aware of the hazards caused by the accumulation of high concentrations, especially in confined spaces. Compliance with OSHA regulations, especially 29 CFR 1910.146 (confined space entry), is essential

#### SECTION 8. PERSONAL PROTECTION / EXPOSURE CONTROL

**ENGINEERING CONTROLS:** Provide good ventilation and/or local exhaust to prevent accumulation of high concentrations of gas. Oxygen levels in work area should be monitored to ensure they do not fall below 19.5%.

#### RESPIRATORY PROTECTION:

GENERAL USE: None required.

EMERGENCY: Use SCBA or positive pressure air line with mask and escape pack in areas where oxygen concentration is less than 19.5%. Air purifying respirators will not provide protection.

**OTHER PROTECTIVE EQUIPMENT:** Safety glasses. Safety shoes and leather work gloves are recommended when handling cylinders.

#### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE:** Colorless gas

**ODOR:** Odorless

**MOLECULAR WEIGHT:** 28.01

**BOILING POINT** (1 Atm): -320.4 °F (-195.8 °C)

**SPECIFIC GRAVITY** (Air =1): 0.967

**SPECIFIC VOLUME** (at 70 ° F (21.1 ° C) and 1 atm): 13.81 ft<sup>3</sup>/lb (0.867m<sup>3</sup>/kg)

**FREEZING POINT/MELTING POINT:** -345.8 ° F (-209.9 °C)

**VAPOR PRESSURE:** Not applicable at 70 ° F

**GAS DENSITY** (at 70 ° F (21.1 ° C) and 1 atm): 0.072 lb/ft<sup>3</sup> (1.153 kg/m<sup>3</sup>)

**SOLUBILITY IN WATER** (Vol./Vol. at 32°F (0°C)): 0.023

#### SECTION 10. STABILITY AND REACTIVITY

**CHEMICAL STABILITY:** Stable

**CONDITIONS TO AVOID:** None

**INCOMPATIBILITY:** None

**HAZARDOUS DECOMPOSITION PRODUCTS:** None

**HAZARDOUS POLYMERIZATION:** Will not occur.

#### SECTION 11. TOXICOLOGICAL INFORMATION

Nitrogen is a simple asphyxiant.

#### SECTION 12. ECOLOGICAL INFORMATION

The atmosphere contains approximately 78% nitrogen. No adverse ecological effects are expected. Nitrogen does not contain any Class I or Class II ozone depleting chemicals. Nitrogen is not listed as a marine pollutant by DOT (49 CFR 171).

#### SECTION 13. DISPOSAL

**UNUSED PRODUCT / EMPTY CONTAINER:** Return cylinder and unused product to supplier. Do not attempt to dispose of residual or unused quantities.

**DISPOSAL:** For emergency disposal, secure the cylinder and slowly discharge gas to the atmosphere in a well ventilated area or outdoors.

#### SECTION 14. TRANSPORT INFORMATION

**DOT HAZARD CLASS:** 2.2 **DOT SHIPPING LABEL:** Nonflammable Gas

**DOT SHIPPING NAME:** Nitrogen, Compressed **IDENTIFICATION NUMBER:** UN1066

**REPORTABLE QUANTITY (RQ):** None

**SPECIAL SHIPPING INFORMATION:** Cylinders should be transported in a secure upright position in a well ventilated truck. Never transport in passenger compartment of a vehicle.

Compressed gas cylinders shall not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with the owner's written consent is a violation of federal law.

#### SECTION 15. REGULATORY INFORMATION

##### U.S. FEDERAL REGULATIONS:

##### Environmental Protection Agency (EPA):

**CERCLA:** Comprehensive Environmental Response, Compensation, and Liability Act of 1980 requires notification to the National Response Center of a release of quantities of hazardous substances equal to or greater than their reportable quantities (RQ's) in 40 CFR 302.4.

CERCLA Reportable Quantity: None.

**SARA TITLE III:** Superfund Amendment and Reauthorization Act of 1986

**SECTION 302/304:** Requires emergency planning on threshold planning quantities (TPQ) and release reporting based on reportable quantities (RQ) of EPA's extremely hazardous substances (40 CFR 355).

Nitrogen is not listed as an extremely hazardous substance.

Threshold Planning Quantity (TPQ): None

**SECTIONS 311/312:** Require submission of material safety data sheets (MSDSs) and chemical inventory reporting with identification of EPA defined hazard classes. The hazard classes for this product are:

IMMEDIATE HEALTH: No PRESSURE: Yes

DELAYED HEALTH: No REACTIVITY: No

FIRE: No

**SECTION 313:** Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372.

Nitrogen does not require reporting under Section 313.

**40 CFR Part 68 - Risk Management for Chemical Accident Release Prevention:** Requires the development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

Nitrogen is not listed as a regulated substance.

**TSCA - TOXIC SUBSTANCES CONTROL ACT:** Nitrogen is listed on the TSCA inventory.

##### OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:

**29 CFR 1910.119 - Process Safety Management of Highly Hazardous Chemicals:** Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

Nitrogen is not listed in Appendix A as a highly hazardous chemical.

##### STATE REGULATIONS

CALIFORNIA:

Proposition 65: This product does NOT contain any listed substances which the State of California requires warning under this statute.

SCAQMD Rule: VOC = Not applicable

#### SECTION 16. OTHER INFORMATION

##### NFPA RATINGS: HMIS RATINGS:

HEALTH: 0 HEALTH: 0

FLAMMABILITY: 0 FLAMMABILITY: 0

REACTIVITY: 0 REACTIVITY: 0

SPECIAL: SA\*

\*Compressed Gas Association recommendation to designate simple asphyxiant.

\*\* Documents with Review Dates August 1997 and Revision Date March 1994 are identical in content and either may be used.