

# Material Safety Data Sheet

Version 1.5  
Revision Date 07/13/2004

MSDS Number 300000000100  
Print Date 06/24/2007

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Nitrogen (Refrigerated)

Chemical formula : N<sub>2</sub>

Synonyms : Nitrogen (refrigerated), Liquid Nitrogen, LIN, Cryogenic Liquid Nitrogen, Nitrogen

Product Use Description : General Industrial

Company : Air Products and Chemicals, Inc  
7201 Hamilton Blvd.  
Allentown, PA 18195-1501

Telephone : 800-345-3148

Emergency telephone number : 800-523-9374 USA  
01-610-481-7711 International

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Concentration (Volume)
Nitrogen	7727-37-9	100 %

Concentration is nominal. For the exact product composition, please refer to Air Products technical specifications.

## 3. HAZARDS IDENTIFICATION

### Emergency Overview

Extremely cold liquid and gas under pressure.  
Direct contact with liquid can cause frostbite.  
Can cause rapid suffocation.  
Avoid breathing gas.  
Self contained breathing apparatus (SCBA) may be required.

### Potential Health Effects

Inhalation : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themselves.

Eye contact : Contact with liquid may cause cold burns/frost bite.

Skin contact : Contact with liquid may cause cold burns/frost bite. May cause severe frostbite.

Ingestion : Ingestion is not considered a potential route of exposure.

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Chronic Health Hazard : Not applicable.

## Exposure Guidelines

Primary Routes of Entry : Inhalation  
Eye and skin contact.

Target Organs : None.

Symptoms : Exposure to oxygen deficient atmosphere may cause the following symptoms:  
Dizziness. Salivation. Nausea. Vomiting. Loss of mobility/consciousness.

## Aggravated Medical Condition

None.

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## 4. FIRST AID MEASURES

- General advice : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- Eye contact : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Keep eye wide open while rinsing.
- Skin contact : In case of frostbite, obtain medical treatment immediately. Wash frost-bitten areas with plenty of water. Do not remove clothing. Do not rub frozen parts as tissue damage may result. Cover wound with sterile dressing. As soon as practical, place the affected area in a warm water bath- which has a temperature not to exceed 40 °C (105 °F).
- Ingestion : Ingestion is not considered a potential route of exposure.
- Inhalation : Move to fresh air. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. In case of shortness of breath, give oxygen.

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## 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : All known extinguishing media can be used.
- Specific hazards : Spill will rapidly vaporize forming an oxygen deficient vapor cloud. Vapor cloud may obscure visibility. Do not direct water spray at container vent. Move away from container and cool with water from a protected position. Keep containers and surroundings cool with water spray.
- Special protective equipment for fire-fighters : Wear self contained breathing apparatus for fire fighting if necessary.



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## Engineering measures

Natural or mechanical to prevent oxygen deficient atmospheres below 19.5% oxygen.  
Keep self contained breathing apparatus readily available for emergency use.

## Personal protective equipment

- Respiratory protection : Use self-contained breathing apparatus. Air purifying respirators will not provide protection. Users of breathing apparatus must be trained.
- Hand protection : Sturdy work gloves are recommended for handling cylinders. Loose fitting thermal insulated or leather gloves. The breakthrough time of the selected glove(s) must be greater than the intended use period.
- Eye protection : Safety glasses recommended when handling cylinders. Protect eyes, face and skin from liquid splashes.
- Skin and body protection : Never allow any unprotected part of the body to touch uninsulated pipes or vessels which contain cryogenic fluids. The extremely cold metal will cause the flesh to stick fast and tear when one attempts to withdraw from it. Safety shoes are recommended when handling cylinders.
- Special instructions for protection and hygiene : Ensure adequate ventilation, especially in confined areas.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

- Form : Liquefied gas.
- Color : Colorless.
- Odor : No odor warning properties.
- Molecular Weight : 28 g/mol
- Relative vapor density : 0.97 (air = 1)
- Relative density : 0.8 (water = 1)
- Boiling point/range : -321 °F (-196 °C)
- Critical temperature : -233 °F (-147 °C)
- Melting point/range : -346 °F (-210 °C)
- Water solubility : 0.02 g/l

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## 10. STABILITY AND REACTIVITY

- Stability : Stable under normal conditions.

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Materials to avoid : Carbon steel.

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## 11. TOXICOLOGICAL INFORMATION

### Acute Health Hazard

Ingestion : No data is available on the product itself.  
Inhalation : No data is available on the product itself.  
Skin. : No data is available on the product itself.

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## 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects

Aquatic toxicity : Not applicable.  
Toxicity to other organisms : Not applicable.

### Persistence and degradability

Mobility : No data available.  
Bioaccumulation : No data is available on the product itself.

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## 13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products : Return unused product in original cylinder to supplier. Contact supplier if guidance is required.  
Contaminated packaging : Return cylinder to supplier.

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## 14. TRANSPORT INFORMATION

### CFR

Proper shipping name : Nitrogen, refrigerated liquid  
Class : 2.2  
UN/ID No. : UN1977

### IATA

Proper shipping name : Nitrogen, refrigerated liquid  
Class : 2.2  
UN/ID No. : UN1977

### IMDG

Proper shipping name : NITROGEN, REFRIGERATED LIQUID

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Class : 2.2  
UN/ID No. : UN1977

## CTC

Proper shipping name : NITROGEN, REFRIGERATED LIQUID  
Class : 2.2  
UN/ID No. : UN1977

### Further Information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

## 15. REGULATORY INFORMATION

OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class(es)  
Cryogenic (refrigerated) Liquid

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on Inventory.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.
Japan	ENCS	Included on Inventory.

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification:  
Acute Health Hazard

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm.

## 16. OTHER INFORMATION

### NFPA Rating

Health : 3  
Fire : 0  
Instability : 0

### HMIS Rating

Health : 3  
Flammability : 0  
Physical hazard : 2

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Prepared by : Air Products and Chemicals, Inc. Global EH&S Product Safety Department

For additional information, please visit our Product Stewardship web site at  
<http://www.airproducts.com/productstewardship/>

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