

iSi Components Material Safety Data Sheet

1. Chemical Product and Company Identification

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| Product Name: Nitrogen, Compressed | Trade Name: Nitrogen |
| Chemical Name: Nitrogen | Synonyms: Not applicable |
| Formula: N ₂ | Chemical Family: Considered as an inert gas. |
| Telephone: | Company Name: <i>iSi North America, Inc.</i> 175 Route 46 West Fairfield, NJ 07004 |
| Emergencies: 1-800-424-9300* | |
| Routine: 1-973-227-2426 | |

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information contact iSi Components or call the number above.*

2. Composition / Information on Ingredients

Nitrogen is an inert gas supplied in cylinders which range in size from 10 ml. to 350 ml.

| INGREDIENT NAME | CAS NUMBER | PERCENTAGE | OSHA PEL | ACGIH TLV-TWA |
|-----------------|------------|------------|----------------------------|-------------------|
| Nitrogen | 7727-37-9 | >99% | None currently established | Simple asphyxiant |

**The symbol ">" means "greater than."*

3. Hazards Identification

EMERGENCY OVERVIEW

**CAUTION! High-pressure gas.
Can cause rapid suffocation.
May cause dizziness and drowsiness.
Self-contained breathing apparatus may
be required by rescue workers.
Odor: None**

THRESHOLD LIMIT VALUE: Simple asphyxiant (ACGIH 1997)

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION–Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headache, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

SKIN CONTACT–No harm expected.

SWALLOWING–This product is a gas at normal temperature and pressure.

EYE CONTACT–No harm expected.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE: No harm expected.

OTHER EFFECTS OF OVEREXPOSURE: Nitrogen is an asphyxiant. Lack of oxygen can kill.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: The toxicology and the physical and chemical properties of nitrogen suggest that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: None known.

CARCINOGENICITY: Nitrogen is not listed by NTP, OSHA, or IARC.

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| 4. First Aid Measures |
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INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

SKIN CONTACT: Flush with water.

SWALLOWING: This product is a gas at normal temperature and pressure.

EYE CONTACT: Flush eyes with warm water. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly.

NOTES TO PHYSICIAN: There is no specific antidote. This product is nearly inert. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.

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| 5. Fire Fighting Measures |
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| FLASH POINT (test method) | Not applicable | AUTOIGNITION TEMPERATURE | Not applicable |
| FLAMMABLE LIMITS IN AIR, % by volume | LOWER | Not applicable | UPPER Not applicable |

EXTINGUISHING MEDIA: Nitrogen cannot catch fire. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

CAUTION! High-pressure gas. Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool, then move them away from fire area if without risk.

Self-contained breathing apparatus may be required by rescue workers. On-site fire brigades must comply with OSHA 29 CFR 1910.156. **Recommended storage temperature: -30 degrees C to +65 degrees C.**

UNUSUAL FIRE AND EXPLOSION HAZARDS: Nitrogen cannot catch fire. Heat of fire can build pressure in cylinder and cause it to rupture. No part of cylinder should be subjected to high temperatures.

HAZARDOUS COMBUSTION PRODUCTS: None known.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

CAUTION! High-pressure gas. Immediately evacuate all personnel from danger area. Nitrogen is an asphyxiant. Lack of oxygen can kill. Use self-contained breathing apparatus where needed. Shut off flow if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area. Test for sufficient oxygen, especially in confined spaces, before allowing reentry.

WASTE DISPOSAL METHOD: Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE: Store and use with adequate ventilation. If applicable, secure cylinders upright to keep them from falling or being knocked over.

PRECAUTIONS TO BE TAKEN IN HANDLING: Protect cylinders from damage, refer to section 16.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, "Safe Handling of Compressed Gases in Containers," available from the CGA.

8. Exposure Controls/Personal Protection

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST—Use a local exhaust system, if necessary, to prevent oxygen deficiency.

MECHANICAL (general)—General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.

SPECIAL—None

OTHER—None

RESPIRATORY PROTECTION: None required under normal use. However, air supplied respirators are required while working in confined spaces with this product. Respiratory protection must conform to OSHA rules as specified in 29 CFR 1910.134.

SKIN PROTECTION: Wear work gloves when handling cylinders.

EYE PROTECTION: Wear safety glasses when handling cylinders.

OTHER PROTECTIVE EQUIPMENT: Protective equipment for cylinder handling, select in accordance with OSHA 29 CFR 1910.132 and 1910.133.

9. Physical and Chemical Properties

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| MOLECULAR WEIGHT: 28.01 | EXPANSION RATIO: Not applicable |
| SPECIFIC GRAVITY (air=1): At 70°F (21.1°C) and 1 atm: 0.967 | SOLUBILITY IN WATER: % by wt., vol/vol at 32°F (0°C): 0.023 |
| GAS DENSITY: At 70°F (21.1°C) and 1 atm: 0.072 lbs/ft ³ (1.153 kg/m ³) | VAPOR PRESSURE: AT 68°F (20°C): Not applicable |
| PERCENT VOLATILES BY VOLUME: 100 | EVAPORATION RATE (Butyl Acetate=1): Gas, not applicable |
| BOILING POINT (1 atm): -320.4°F (-195.8°C) | pH: Not applicable |
| MELTING POINT (1 atm): -345.8°F (-209.9°C) | |
| APPEARANCE, ODOR, AND STATE: Colorless, odorless, tasteless gas at normal temperature and pressure. | |

10. Stability and Reactivity

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| STABILITY: | Unstable | | Stable | X |
| INCOMPATIBILITY (materials to avoid): None currently known. Nitrogen is chemically inert. | | | | |
| HAZARDOUS DECOMPOSITION PRODUCTS: None | | | | |
| HAZARDOUS POLYMERIZATION: | May Occur | | Will Not Occur | X |

CONDITIONS TO AVOID: Under certain conditions, nitrogen can react violently with lithium, neodymium, titanium, and magnesium to form nitrides. At high temperature it can also combine with oxygen and hydrogen.

11. Toxicological Information

Nitrogen is a simple asphyxiant.

12. Ecological Information

No adverse ecological effects expected. Nitrogen does not contain any Class I or Class II ozone-depleting chemicals. Nitrogen is not listed as a marine pollutant by DOT.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return

cylinder to supplier. For emergency disposal, secure cylinder in a well-ventilated area or outdoors, then slowly discharge gas to the atmosphere.

14. Transport Information

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| DOT/IMO SHIPPING NAME: Nitrogen, compressed | HAZARD CLASS: 2.2 |
| IDENTIFICATION NUMBER: UN 1066 | PRODUCT RQ: Not applicable |
| SHIPPING LABEL(s): NONFLAMMABLE GAS | PLACARD (When required): NONFLAMMABLE GAS |

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, nonventilated compartment of a vehicle can present serious safety hazards.

Shipment of compressed gas cylinders that have been filled without the owner's consent is a violation of federal law [49 CFR 173.301(b)].

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

U.S. FEDERAL REGULATIONS:

EPA (Environmental Protection Agency)

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (40 CFR Parts 117 and 302):

Reportable Quantity (RQ): None

SARA: Superfund Amendment and Reauthorization Act:

- **SECTIONS 302/304:** Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of extremely hazardous substances (40 CFR Part 355):

Threshold Planning Quantity (TPQ): None.

Extremely Hazardous Substances (40 CFR 355): None.

- **SECTIONS 311/312:** Require submission of Material Safety Data Sheets (MSDSs) and chemical inventory reporting with identification of EPA hazard categories. The hazard categories for this products are as follows:

IMMEDIATE: No

DELAYED: No

PRESSURE: Yes

REACTIVITY: No

FIRE: No

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

Nitrogen does not require reporting under Section 313.

40 CFR 68: Risk Management Program for Chemical Accidental Release Prevention: Requires 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: This product is not listed by California under the Safe Drinking Water Toxic Enforcement Act of 1986 (Proposition 65).

PENNSYLVANIA: This product is subject to the Pennsylvania Worker and Community Right-To-Know Act (35 P.S. Sections 7301-7320).

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| 16. Other Information |
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Be sure to read and understand all labels and instructions supplied with all containers of this product.

HAZARD RATING SYSTEMS:

NFPA RATINGS:

HEALTH = 0
FLAMMABILITY = 0
REACTIVITY = 0
SPECIAL = SA

HMIS RATINGS:

HEALTH = 0
FLAMMABILITY = 0
REACTIVITY = 0
(CGA recommends this to designate Simple Asphyxiant)