**Material Safety Data Sheets (MSDS)**

IDENTIFICATION

**NITROGEN**

Chemical formula:

Product Use Description: Synthetic/Analytical chemistry. Liquid-cryogenic coolant.

**CHEMICAL AND COMMON NAMES**

Synonyms: nitrogen; nitrogen gas; Nitrogen NF, LIN, Cyrogenic Liquid Nitrogen

PHYSICAL & CHEMICAL PROPERTIES

Physical State: Gas/liquid under pressure Color: colorless gas (liquid under pressure)

Odor: odorless Taste: N/A

Molecular Weight: 28.02 g/mole Molecular Formula: N2

Boiling Point: -195.8C, -320.4F Freezing Point: -210C, -236F

Decompression Point: N/A Vapor Pressure: N/A

Vapor Density (air=1): 0.967 Specific Gravity: N/A

Liquid Density: 50.46 lb/ft 3 Specific Volumn (ft3/lb): 13.8889

Gas Density (lb/ft3): 0.072 Volatility: critical temperature

Odor Threshold: N/A Evaporation Rate: N/A

Viscosity: N/A Coefficient of Water/Oil Distribution: N/A

Solvent Solubility: N/A

COMPOSITION/INFORMATION ON INGREDIENTS

Components:Nitrogen

CAS Number: 7727-37-9

Concentration (Volume): 100%

HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH = 0 FIRE = 0 REACTIVITY = 0

GAS: Do not puncture or incinerate container. Can cause rapid suffocation. May cause severe frostbite. Inhalation acts as a simple asphyxiant. Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

NFPA RATINGS (SCALE 0-4): HEALTH = 3 FIRE = 0 REACTIVITY = 0

LIQUID: Extremely cold liquid and gas under pressure. Can cause rapid suffocation. May cause severe frostbite and cryogenic burns.

FIRST AID

For inhalation, skin and/or eye contact:

**Breathing:** Inhalation. Provide fresh air, or give artificial respiration if not breathing, mouth to mouth preferred. If breathing is difficult, give oxygen. Get immediate medical attention.

**Skin:** Frostbite. Rinse with room temperature water, seek medical attention.
**Eyes:** Frostbite. Rinse with water lukewarm water for at least 15 minutes, then seek emergency medical attention.

FIRE FIGHTING MEASURES

Non-flammable. Decomposition products may include nitrogen oxides. Use an extinguishing agent suitable for the surrounding fire.

Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode. Fire fighters should war appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

ACCIDENTAL RELEASE MEASURES

Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment. Shut off gas supply if this can be one safely. Isolate area until gas has dispersed. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Immediately contact emergency personnel. Stop leak if without risk.

HANDLING AND STORAGE

High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide or drop. Use a suitable hand truck for cylinder movement.

Never allow any unprotected part of the body to touch un-insulated pipes or vessels that contain cryogenic liquids. Prevent entrapment of liquid in closed systems or piping without pressure relief devices. Some materials may become brittle at low temperatures and will easily fracture.

Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperature should not exceed 52C, 125f.

 EXPOSURE CONTROLS/PERSONAL PROTECTION

**VENTILATION**: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

**EYE PROTECTION**: Safety glasses should be worn. When working with cryogenic liquids, wear a full face shield.

**RESPIRATORY PROTECTION:** Use a properly fitted, air-purifying or air fed respirator complying with an approved standard if a risk assessment indicates this is necessary.

**SKIN PROTECTION:** Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**HANDS**: Chemical resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

STABILITY AND REACTIVITY

Stable at normal temperatures and pressure.

Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

Will not polymerize.

TOXICOLOGICAL INFORMATION

No specific information is available in our database regarding the other toxic effects of this material to humans.

ECOLOGICAL INFORMATION

Fish, invertebrate, algal toxicity: No data available.

Biodegradation: No data available.

DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

TRANSPOSRT INFORMATION

Proper Shipping name: Nitrous Oxide

U.S. DOT CFR

ID NUMBER: UN1066 compressed; UN1977 refrigerated liquid

HAZARD CLASS: 2.2

LABELING REQUIREMENTS: 2.2

REGULATORY INFORMATION

**U.S. REGULATIONS**

CERCLA Sections 102a/103 Hazardous Substances (40 CFR 302.4): Not regulated

SARA Title III Section 302 Extremely Hazardous Substances (40 CFR 355 Subpart B): Not regulated

SARA Title III Section 304 Extremely Hazardous Substances (40 CFR 370 Subparts B and C): Nitrogen: Sudden release of pressure.

SARA Title III Section 313 (40 CFR 372.65): This material is not listed.

OSHA Process Safety (29 CFR 1910.119): Not regulated

**STATE REGULATIONS**

This material is not listed.

**CANADIAN REGULATIONS**

WHMIS Classification: This material is not listed

**NATIONAL INVENTORY STATUS**

U.S. Inventory (TSCA): Listed on inventory

TSCA 12(b) Export Notification: Not listed

Canada inventory (DSL/NDSL): Listed on inventory