Safety Data Sheet

NITROGEN, Refrigerated Liquid (N_2)

SECTION 1: IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product Name: Nitrogen, Liquid (NZ)
SDS Number: 0010
Chemical Description: Nitrogen
Chemical Formula: N_2

1.2 Relevant identified uses and uses advised against

Uses: Cryogen, Medical Applications, Food Processing agent, industrial applications, laboratory applications.

1.3 Details of the product supplier

Supplier Name **Nitrogenx Limited**
Address **Unit 5, 9A Northside Drive, Whenuapai, Auckland NZ**
Phone **0800 22 33 85**
Email **compliance@nitrogenx.co.nz**

1.4 Emergency telephone number

National Poisons Centre 0800 764 766 (0800 POISON)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not classified as hazardous according to Hazardous Substances (Classification) Regulations 2001.

HSNO Classification: 2.2 - Not Hazardous
Contains gas under pressure; may explode if heated.

2.2 Label elements

Signal word: **WARNING**
Pictograms:

Hazard Statements: H281 Contains refrigerated gas; may cause cryogenic burns or injury.
Precautionary Statements: P103 Read label before use.
P282 Wear cold insulating gloves, face shield and eye protection.
Response Statements: P315 Get immediate medical advice/attention.
P336 Thaw frosted parts with lukewarm water. Do not rub affected area.
Storage Statements: P403 Store in a well-ventilated place.
Disposal Statements: None allocated.

2.3 Other hazards

Asphyxiant in high concentrations. Effects are proportional to oxygen displacement.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	Product Identifier	Proportion (vol %)
Nitrogen	(Cas No) 7727-37-9	100%

Nitrogen	(EC No) 231-783-9	100%

SECTION 4: FIRST-AID MEASURES

4.1 Description of first-aid measures

Inhalation: Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if not breathing.

Skin Contact: Remove contaminated clothing and gently flush affected areas with warm water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance. Treat as a thermal burn.

Eye Contact: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and flush for 15 minutes. Seek immediate medical attention.

Ingestion: Is not considered a potential route of exposure.

First-Aid facilities: Eye wash facilities should be available.

4.2 Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Direct contact with liquified material or escaping compressed gas may cause frostbite injury.

Effects of oxygen deficiency are:

12-16%	Breathing and pulse rate increased.
10-12%	Emotional upset, abnormal fatigue, disturbed respiration.
6-10%	Nausea and vomiting, collapse, or loss of consciousness.
Below 6%	Convulsive movements, possible respiratory collapse, and death.

4.3 Immediate medical attention and special treatment needed

Treat Symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Use water spray or fog to cool containers from protected area.
Do not use water jet to extinguish.

5.2 Specific hazards arising for the substance or mixture

Exposure to fire may cause containers to rupture or explode.
Non-Flammable.

5.3 Advice for firefighters

Specific Methods: Use fire control measures appropriate for surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Remove cool cylinders from the path of the fire if this can be done without risk. Evacuate the area if unable to keep cylinders cool. Do not approach cylinders or containers suspected of being hot.

Special Protective Equipment: Standard protective clothing and equipment including Self Contained Breathing Apparatus for fire fighters.
Do not enter fire area without proper personal protective equipment, including respiratory.

Hazchem Code: 2T
2 Use fog or fine spray.
T Wear full fire kit and breathing apparatus. Dilute spill and run off.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures.
If the cylinder is leaking, evacuate area of personnel. Inform manufacturer / supplier of leak. Use Personal Protective Equipment (PPE) as detailed in Section 8 of the SDS. Ventilate area where possible and eliminate ignition sources.

6.2 Environmental precautions.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.3 Methods of cleaning up.
Stop the flow of material if this is without risk. If the leak is irreparable, move the cylinder to a safe and well-ventilated area, and allow to discharge. Keep area evacuated and free from ignition sources until any leaked or spilled liquid gas evaporated.

6.4 Reference to other sections.
See sections 8 and 13 for exposure controls and disposal.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling.

Safe use of the Product	Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Only experienced and properly instructed persons should handle gases under pressure. Do not smoke while handling product. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Do not breathe gas.
Safe handling of gas receptacle	Refer to supplier's container handling instructions. Protect cylinders from physical damage; do not drag, roll, slide or drop. If user experiences any difficulty operating cylinder valve discontinue use and contact the supplier. Never attempt to repair or modify container valves or safety relief devices. Keep container outlets clean and free from contaminants particularly oil and water. Do not remove or deface labels provided by the supplier for the identification of the contents.

7.2 Conditions for safe storage, including any incompatibilities.

General	Portable liquid container should be stored below 45°C in a secure area, properly secured and upright to prevent spilling. Segregate from flammable gases and other flammable materials stored. Store containers away from fire risk, sources of heat or ignition and away from heavy traffic areas and emergency exits.
Approved Handlers	No requirements.
Location Test Certificates	No requirements.

7.3 Specific Use/s
No specific information provided.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 Control parameters

OEL (Occupational Exposure Limits)	No data available
DNEL (Derived-No Effect Level)	No data available
PNEC (Predicted No-Effect Concentration)	No data available

8.2 Exposure controls

Exposure Standards:	Simple asphyxiant.
Engineering Controls:	Avoid inhalation. Use in well ventilated areas. Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages.

8.3 Individual protection measures

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered.

Personal Protection:	Compliant to EN/ISO standards should be selected.
Eye / Face Protection	Wear safety glasses to protect the eyes when handling Liquid Nitrogen, When transferring Liquid Nitrogen from one vessel to another and when immersing objects.
Skin Protection	Wear cold insulating, or leather gloves that can be easily removed in the event of splashes entering a glove. These gloves are not designed for immersion into the liquid nitrogen. Wear covered shoes when handling product and containers.
Respiratory Protection	Where an inhalation risk exists, wear Self Contained Breathing Apparatus (SCBA)

8.4 Environmental exposure controls

None necessary.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical State:	Gas
Appearance:	Colourless, Liquid
Odour:	Odourless
Flammability:	Non-flammable
Melting Point:	-210°C
Boiling Point:	-195.8°C
Flash Point:	Not applicable
PH:	Not applicable
Specific gravity:	Not applicable
Vapour density:	Not available
Partition coefficient:	Not available

Autoignition temperature:	Not available
Decomposition temperature:	Not available
Viscosity:	Not available
Explosive properties:	Not available
Oxidising properties:	Not available
Odour threshold:	Not available

9.2 Other Information

% Volatiles	100 %
	Gas / Vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No reactivity hazard other than the effects described in subsections below.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

None.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Compatible with most commonly used materials.

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

SECTION 11: TOXICOLOGY INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Based on available data; the classification criteria are not met.
Skin corrosion / irritation	Not classified as a skin irritant. Contact with liquified material may cause frostbite injury.
Eye damage / irritation	Not classified as an eye irritant. Contact with liquified material may cause frostbite injury.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.
Reproductive	Not classified as a reproductive toxin.
STOT – Single exposure Specific Target Organ Toxicity	Asphyxiant. Effects are proportional to oxygen displacement.
STOT – Repeated exposure Specific Target Organ Toxicity	Not classified as causing organ damage from repeated exposure.
Aspiration	Not classified as causing aspiration.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

No ecological damage caused by this product.

12.2 Persistence and degradability

No ecological damage caused by this product.

12.3 Bio accumulative potential

No ecological damage caused by this product.

12.4 Mobility in soil

No ecological damage caused by this product.

12.5 Other adverse effects

No further information provided.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal:	Cylinders should be returned to the manufacturer for disposal of contents.
Legislation:	Dispose of in accordance with relevant local legislation.

13.2 Additional information

Vent to atmosphere in a well-ventilated place. Do not discharge into any place where its accumulation could be dangerous. Discharge to atmosphere in larger quantities should be avoided.

SECTION 14: TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD ACCORDING TO LAND TRANSPORT RULE: DANGEROUS GOODS 2005; NZS 5433:2012, UN, IMDG OR IATA

2.2 Non-flammable, Non-toxic gas

14.1 Land transport

Land Transport Rule:	Dangerous Goods 2005: NZS 5433:2012
UN Number:	1977
UN Proper Shipping Name:	NITROGEN, REFRIGERATED LIQUID
Transport hazard class:	2.2
Transport restrictions:	C/E – Tank carriage: Passage forbidden through tunnels of category C, D and E. Other carriage: Passage forbidden through tunnels of category E
Packing Group:	Not applicable
Environmental hazards:	None

14.2 Transport by Sea

IMDG:	International Maritime Dangerous Goods
UN Number:	1977
UN Proper Shipping Name:	NITROGEN, REFRIGERATED LIQUID
Transport hazard class:	2.2
Packing Group:	Not applicable
Environmental hazards:	None
Emergency Schedule (EmS)	Fire F-C Spillage S-V

14.3 Transport by Air

ICAO / IATA:	International Civil Aviation Organisation / International Air Transport Association
UN Number:	1977
UN Proper Shipping Name:	NITROGEN, REFRIGERATED LIQUID
Transport hazard class:	2.2
Packing Group:	Not applicable
Environmental hazards:	None

14.4 Special precautions for user

Hazchem code: 2T

Special transport information: Avoid transport on vehicles where the load space is not separate from the drivers 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.

Before transporting product containers:

- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure the cylinder valve outlet is closed and not leaking.
- Ensure valve protection device (where provided) is correctly fitted.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture

HSNO Approved code: HSR001027

Listed on the New Zealand Inventory of Chemicals (NZIoC)

15.2 Chemical safety assessment

A chemical safety assessment does not need too be carried out for this product.

SECTION 16: OTHER INFORMATION

16.1 Additional Information

Personal Protective Equipment Guidelines:

The recommendation for protective equipment contained within this Safety Data Sheet is provided as a guide only. These gloves are not designed for immersion into the liquid nitrogen. Factors such as form of product, method of application, working environment, quantity used, and product concentration should be considered before final selection of personal protective equipment is made. A risk assessment should be conducted and documented in each work area to assess the risk related to the use of the product and to select the PPE that matches the relevant risk.

Health effects from exposure:

It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. It is required that users will assess the risks and apply control measures as appropriate. The hazard of asphyxiation is often overlooked and must be stressed during operator training.

Disclaimer of liability:

This SDS has been prepared by Nitrogenx and serves as their Safety Data Sheet (SDS). Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Details given in this document are believed to be correct at the time of printing however they are not guaranteed. While proper care has been taken in the preparation of this document, no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained within this SDS can be accepted.

Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact Nitrogenx directly.