

SECTION 1: Identification

1.1 Product Identifier

Trade name	Nitrous Oxide
MSDS No.	0074
Chemical description	Nitrous Oxide
	CAS No. 10024-97-2
	EC No. 233-032-0
Chemical formula	N ₂ O
Synonyms	-

1.2 Relevant identified uses and uses advised against

Test gas/Calibration gas, Laboratory use, Chemical reaction/ Synthesis, Aerosol propellant.

1.3 Details of the supplier

Name	Air Liquide New Zealand Limited
Address	19 Maurice Road, Penrose Auckland 1061, New Zealand
Phone	Phone: (09) 622 3880

1.4 Emergency telephone number

0800 156 516

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Hazardous Substances [Classification] Regulations 2001

HSNO classification(s)	5.1.2A - Oxidising substances that are gases 6.8B - Substances that are suspected human reproductive or developmental toxicants 6.9B - Substances that are harmful to human target organs or systems Compressed Gases - Contains gas under pressure; may explode if heated
------------------------	---

Physical Hazards

2.2 Label Elements

Hazard pictograms



Signal word Danger

Hazard statements
 H270 - May cause or intensify fire; oxidizer
 H280 - Contains gas under pressure; may explode if heated
 H336 - May cause drowsiness or dizziness

Precautionary statements

<u>Prevention</u>	P103 - Read label before use P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P220 - Keep away from clothing and other combustible materials P244 - Keep valves and fittings free from oil and grease P260 - Do not breathe dust/fumes/gas/mist/vapours/spray.
-------------------	--

P270 - Do not eat, drink or smoke when using this product.

Response P370 + P376 - In case of fire: Stop leak if safe to do so
 P304 + P340 + P315 - IF INHALED : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice/attention

Storage P403 - Store in a well ventilated place.
 P405 - Store locked up.

Disposal -

2.3 Other Hazards

Asphyxiant in high concentrations.
 Contact with liquid may cause cold burns/frostbite.

SECTION 3: Composition/information on ingredients

3.1 Substance/Mixtures

Name	Chemical Formula	%	Product Identifier
Nitrous Oxide	N ₂ O	100	(Cas No) 10024-97-2
			(EC No) 233-032-0

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 breathing stopped.
Skin contact	In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance. For liquid spillage - flush with water for at least 15 minutes.
Eye contact	Immediately flush eyes thoroughly with water for at least 15 minutes.
Ingestion	Ingestion is not considered a potential route of exposure.

4.2 Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of coordination

4.3 Indication of any immediate medical attention and special treatment needed

None

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	Water spray or fog.
Unsuitable extinguishing media	Do not use water jet to extinguish.

5.2 Specific hazards arising for the substance or mixture

Specific hazards	Exposure to fire may cause containers to rupture/explode. Supports combustion.
Hazardous combustion Products	If involves in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: Nitric oxide/nitrogen dioxide

5.3 Advice for firefighters

Specific methods	Use fire control measures appropriate for the surrounding fire. Exposure to fire
------------------	--

	<p>and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.</p> <p>If possible, stop flow of product.</p> <p>Use water spray or fog to knock down fire fumes if possible.</p> <p>Move containers away from the fire area if this can be done without risk.</p>
Special protective equipment for firefighters	Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper personal protective equipment, including respiratory protection.
Hazchem code	2P
	2 Fine Water Spray Use fog or fine spray
	P Risk of violent reaction or explosion. Wear liquid-tight chemical protective clothing and breathing apparatus. Dilute spill and run-off.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Try to stop release.
Evacuate area.
Monitor concentration of released product.
Eliminate ignition sources.
Ensure adequate air ventilation.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Act in accordance with local emergency plan.
Stay upwind.

6.2 Environmental precautions

Try to stop release.

6.3 Methods and material for containment and cleaning up

Ventilate area

6.4 References to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Safe use of the product	<p>The substance must be handled in accordance with good industrial hygiene and safety procedures.</p> <p>Only experienced and properly instructed persons should handle gases under pressure.</p> <p>Consult supplier for specific recommendations.</p> <p>Consider pressure relief device(s) in gas installations.</p> <p>Ensure the complete gas system was (or is regularly) checked for leaks before use.</p> <p>Do not smoke while handling product.</p> <p>Use no oil or grease.</p> <p>Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.</p> <p>Use only oxygen approved lubricants and oxygen approved sealings.</p> <p>Use only with equipment cleaned for oxygen service and rated for cylinder pressure.</p> <p>Do not breathe gas.</p> <p>Avoid release of product into atmosphere.</p>
Safe handling of the gas receptacle	<p>Refer to supplier's container handling instructions.</p> <p>Do not allow backfeed into the container.</p>

Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.

Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.

If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.

Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier.

Keep container valve outlets clean and free from contaminants particularly oil and water.

Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.

Close container valve after each use and when empty, even if still connected to equipment.

Never attempt to transfer gases from one cylinder/container to another.

Never use direct flame or electrical heating devices to raise the pressure of a container.

Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

Suck back of water into the container must be prevented.

Open valve slowly to avoid pressure shock.

7.2 Conditions for safe storage, including any incompatibilities

General	Containers should not be stored in conditions likely to encourage corrosion. Container valve guards or caps should be in place. Containers should be stored in the vertical position and properly secured to prevent them from falling over. Stored containers should be periodically checked for general condition and leakage. Keep container below 50°C in a well ventilated place. Segregate from flammable gases and other flammable materials in store. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.
Approved handlers	Approved handlers and locations certificates are required if more than 200m ³ is stored on site

7.3 Specific use(s)

None

SECTION 8: Exposure controls/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 Appropriate engineering controls

Provide adequate general and local exhaust ventilation.

Systems under pressure should be regularly checked for leakages.

Avoid oxygen rich (>23.5%) atmospheres.

Gas detectors should be used when oxidising gases may be released.

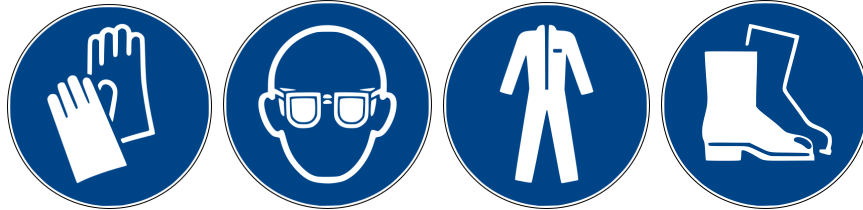
Consider a work permit system e.g. for maintenance activities.

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:

Wear suitable hand, body and head protection. Wear goggles with suitable filter lenses when use is cutting/welding.

PPE compliant to the recommended EN/ISO standards should be selected.



Eye/face protection	Wear safety glasses with side shields.
Skin protection	Wear working gloves when handling gas containers. Consider the use of flame resistant safety clothing. Wear safety shoes while handling containers.
Respiratory protection	None necessary.
Thermal hazards	None necessary.

8.4 Environmental exposure controls

None necessary.

SECTION 9: Physical and chemical properties

9.1 information on basic physical and chemical properties

Appearance

Physical state 20°C/101.3kPa	Gas
Colour	Colourless
Odour	Sweetish. Poor warning properties at high concentrations.
Odour threshold	Odour threshold is subjective and inadequate to warn of overexposure.
pH value	Not applicable
Molar mass [g/mol]	44 g/mol
Melting point [°C]	-90.81 °C
Boiling point [°C]	-88.5 °C
Flash point [°C]	Not applicable for gases and gas mixtures.
Critical temperature [°C]	-36.4 °C
Evaporation rate (ether=1)	Not applicable for gases and gas mixtures.
Flammability range	Non flammable
Vapour pressure [20°C]	50.8bar(a)
Vapour pressure [50°C]	Not applicable
Relative density, gas (air=1)	1.5
Relative density, liquid (water=1)	1.2
Solubility in water [mg/l]	1500mg/l
Partition coefficient n-octanol/water [log Kow]	0.4

Autoignition temperature	Not applicable
Viscosity [20°C]	Not applicable
Explosive properties	Not applicable
Oxidising properties	Oxidiser
Coefficient of oxygen equivalency (Ci)	0.6

9.2 Other information

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 normal conditions.

10.3 Possibility of hazardous reactions

Violently oxidises organic material.

10.4 Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5 Incompatible materials

May react violently with reducing agents.

May react violently with combustible materials.

Keep equipment free from oil and grease.

Consider the potential toxicity hazard due to the presence of chlorinated or fluorinated polymers in high pressure (> 30 bar) oxygen lines in case of combustion.

For additional information on compatibility refer to ISO 11114.

10.6 Hazardous decomposition products

None

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity	No known toxicological effects from this product.
Skin corrosion/irritation	No known effects from this product.
Serious eye damage/irritation	No known effects from this product.
Respiratory/skin sensitisation	
Germ cell mutagenicity	No known effects from this product.
Carcinogenicity	No known effects from this product.
Toxic for reproduction: Fertility	No known effects from this product.
Toxic for reproduction: Unborn child	No known effects from this product.
Specific target organ toxicity - Single exposure	May cause drowsiness or dizziness.
Specific target organ toxicity - Repeated exposure	At low concentrations: Neurologic effect, Hemotoxic effect.
Target Organ(s)	Erythrocytes, Kidneys, Liver, Central nervous system
Aspiration hazard	Not applicable for gases and gas mixtures.

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 Bioaccumulative potential

No ecological damage caused by this product.

12.4 Mobility in soil

No ecological damage caused by this product.

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6 Other adverse effects

Effect on ozone layer	None.
Global warming potential [CO ₂ =1]	298
Effect on global warming	Contains greenhouse gas(es). When discharged in large quantities may contribute to the greenhouse effect.

SECTION 13: Disposal consideration

13.1 Waste treatment methods

Cylinders should be returned to the manufacturer for disposal of contents
 Vent to atmosphere in a well ventilated place. Do not discharge into any place where its accumulation could be dangerous

13.2 Additional information

None.

SECTION 14: Transport information



- 2.2 Non-flammable, non-toxic gases
- 5.1 Oxidizing substances

14.1 Land transport

Land Transport Rule: Dangerous Goods 2005: NZS 5433:2012

UN Number	1070
UN proper shipping name	NITROUS OXIDE, COMPRESSED
Transport hazard class(es)	2.2 sub 5.1
Packing group	Not applicable
Environmental hazards	None

14.2 Transport by sea

IMDG - International Maritime Dangerous Goods

UN Number	1070
-----------	------

UN proper shipping name	NITROUS OXIDE, COMPRESSED
Transport hazard class(es)	2.2 sub 5.1
Packing group	Not applicable
Environmental hazards	None
Emergency Schedule (EmS)	Fire F-C Spillage S-W

14.3 Transport by air

ICAO - International Civil Aviation Organisation/IATA - International Air Transport Association

UN Number	1070
UN proper shipping name	NITROUS OXIDE, COMPRESSED
Transport hazard class(es)	2.2 sub 5.1
Packing group	Not applicable
Environmental hazards	None

14.4 Special precautions for user

Hazchem code	2P
Special transport 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. Before transporting product containers: Ensure there is adequate ventilation. Ensure that containers are firmly secured. Ensure cylinder valve is closed and not leaking. Ensure valve outlet cap nut or plug (where provided) is correctly fitted. 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 approval code	HSR001029
--------------------	-----------

Listed on the New Zealand Inventory of Chemicals (NZIoC)

15.2 Chemical safety assessment

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

SECTION 16: Other information

16.1 Indication of changes

Update to reflect GHS requirements	
Date of first issue	May 2014
Revised date	June 2021
Superseeds	10
Version	11

16.2 Training advice

Ensure operators understand the hazard of oxygen enrichment.

16.3 Full text of H-statements

H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated

16.4 Cylinder features

Colour AS4484-2016 Ultramarine
Valve outlet AS2473.3-2007 Fig 13

16.5 Disclaimer of liability

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 going to press.

Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.