## 1. Identification of the substance/mixture and of the company

**Product Name:** Nitrous Oxide
**Chemical formula:** $N_2O$
**Uses:** Medical and Industrial Use.
Perform risk assessment prior to use.
Contact Supplier for more information

**Company Identification:**
Gaz Carbonique Ltée
Lot 1, Ground Floor, Le Hub,
DBM Industrial Zone, Phoenix
Mauritius - Indian Ocean
Tel: (230) 603 2992
Fax: (230) 696 5973
Email: contact@gazcarbo.mu

**Contact Person:**
Mr. Arnaud Rougier Lagane
Chief Operating Manager

## 2. Hazards Identification

**Classification of the substance or mixture**
**Classification according to Regulation EC No. 1272/2008 (CLP)**
Physical Hazards - Gases under pressure - Liquefied gas - H280

**Classification according to Directive 67/548/EEC [DPD]**
Not classified as dangerous substance/mixture

**Label Elements**
**Labelling regulation EC 1272/2008 (CLP)**

**- Hazard Pictograms**

**Hazard Pictograms code:** GHS04
**Signal word**: Warning
**Hazard Statement:** H280 - Contains gas under pressure; may explode if heated.
**Precautionary Statements:**

- **Storage:** P410+P403 – Protect from sunlight. Store in a well-ventilated place.

**Other Hazards:** Asphyxiant in high concentrations
Contact with liquid may cause cold burns/frostbite.



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## 3. Composition/Information on Ingredients

| | |
|---|---|
| **Substance/Mixture:** | Substance |
| **Substance Name:** | Nitrous Oxide |
| **CAS NO.:** | 10024-97-2 |
| **Index-Nr.:** | -------- |
| **EC No:** | 233-032-0 |
| **REACH Registration Number:** | 01-2119970538-25 |

Contains no other components or impurities which will influence the classification of the product.

## 4. First Aid measures

| | |
|---|---|
| **Inhalation:** | Remove victim to uncontaminated area wearing self-contained breathing apparatus<br>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.<br>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. |

## 5. Fire Fighting Measures

| | |
|---|---|
| **Special extinguishing media:** | Water spray or fog. |
| **Unsuitable extinguishing media:** | Do not use water jet to extinguish. |
| **Specific Hazards:** | Exposure to fire may cause containers to rupture/explode.<br>Supports combustion. |
| **Hazardous combustion products:** | If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: Nitric oxide/Nitrogen dioxide. |
| **Advice for fire fighters:** | |
| **Specific methods:** | Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat may cause gas receptacles to rupture.<br>Cool endangered containers with water spray jet from a protected position.<br>Prevent water used in emergency cases from entering sewers and drainage systems.<br>If possible, stop flow of product.<br>Move containers away from the fire area if this can be done without risk. |
| **Special protective equipment for Fire fighters:** | Wear gas tight chemically protective clothing in combination with self-contained breathing apparatus. |

## 6. Accidental Release Measures

| | |
|---|---|
| **Personal precautions:** | Try to stop release.<br>Evacuate area.<br>Ensure adequate air ventilation.<br>Eliminate Ignition sources.<br>Monitor concentration of released product.<br>Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous.<br>Act in accordance with local emergency plan.<br>Stay Upwind. |
| **Environmental precautions:** | Try to stop release. |
| **Clean up methods:** | Ventilate area. |



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## 7. Handling and Storage

**Safe Use of the product:**

Use no oil and grease.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Only experienced and properly instructed persons should handle gases under pressure.
The substance must be handled in accordance with good industrial hygiene and safety procedures.
Do not smoke while handling product.
Do not breathe gas,
Ensure the complete gas system was (or is regularly) checks for leaks before use.
Avoid release of product into atmosphere.
Use self-limiting heating devices. Direct contact electric immersion heaters are not allowed.
Clean all surfaces in direct contact with nitrous oxide as for oxygen service.
Avoid suck back of water, acid and alkalis.
Consider pressure relief device(s) in gas installations.

**Safe handling of the gas receptacle:**

Do not allow back feed into the container.
Open valve slowly to avoid pressure shock.
Damaged valves should be reported immediately to the supplier.
Protect cylinders from physical damage; do not drag, roll, slide or drop. 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 has trouble operating cylinder valve discontinue use and contact supplier.
Never attempt to repair or modify container valves or safety relief devices.
Keep container valve outlets clean and free form contaminates particularly oil and water.
Close cylinder valve after each use and when empty, even if still connected to equipment.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Never attempt to transfer gases from one cylinder 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.

**Storage:**

Keep container below 50°C in a well-ventilated place.
Keep away from combustible materials.
Segregate from flammable gases and other flammable materials in store.
Observe all regulations and local requirements regarding storage of cylinders/containers.
Containers should not be stored in conditions likely to encourage corrosion.
Containers should be stored in vertical position, and properly secured to prevent toppling.
Stored containers should be periodically checked for general condition and leakage.
Stored containers in location free from fire risk and away from sources of heat and ignition.
Cylinder valve guards or caps should be in place.



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## 8. Exposure Controls/Personal Protection

**Control parameters:**

**DNEL: Derived no effect level:** Long-term-systemic effects, inhalation: 183mg/$m^3$

**PNEC: Predicted no effect Concentration:** No data available

**Engineering controls:**
System under pressure should be regularly checked for leakages.
Provide adequate general and local exhaust ventilation.
Avoid oxygen rich (>21%) atmospheres.
Gas detectors should be used when oxidising gases may be released.
Ensure exposure is below occupational exposure limits (where available).
Consider work permit system e.g. for maintenance activities.

**Personal protection & Protective Equipment:**
Conduct and document risk assessment in each work area to assess the risks related to the use of the product and select the appropriate PPEs.
The following recommendations should be considered:
Wear safety shoes while handling cylinders.
Wear safety glasses with side shields or goggles when Trans filling or breaking transfer connections.
Wear working gloves when handling gas containers.
Consider the use of flame resistant safety clothing.

**Environmental exposure controls:** None necessary.

## 9. Physical and Chemical Properties

**General Information**

| | |
|---|---|
| **Appearance/Colour:** | Colourless gas |
| **Odour:** | Sweetish. Poor warning properties at high concentrations. |
| **Odour threshold:** | Odour threshold is subjective and inadequate to warn of overexposure. |
| **Molar Mass:** | 44 g/mol |
| **Melting point:** | -90.81 ◦C |
| **Boiling point:** | -88.5 ◦C |
| **Critical temperature:** | 36.4 ◦C |
| **Auto-ignition temperature:** | Not applicable |
| **Flash point (◦C):** | Not applicable for gases and gas-mixtures. |
| **Evaporation rate (ether=1):** | Not applicable for gases and gas-mixtures. |
| **Flammability range:** | Non-flammable |
| **Vapour pressure (20◦C):** | 50.8 bar (a) |
| **Relative density, gas (air=1):** | 1.5 |
| **Relative density, liquid (water=1):** | 1.2 |
| **Solubility in water:** | 1500 mg/l |
| **Partition coefficient n-octonal/water:** | 0.4 [log kow] |
| **Oxidising properties:** | Oxidiser |
| - **Coefficient of oxygen equivalency (Ci):** | 0.6 |
| **Other data:** | Gas/vapour heavier than air, may accumulate in confined spaces, particularly at or below ground level. |



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## 10. Stability and reactivity

**Reactivity:** No reactivity hazard other than the effects described in sub-sections below.
**Chemical Stability:** Stable under normal conditions.
At temperatures over 575◦C and at atmospheric pressure, nitrous oxide decomposes into nitrogen and oxygen.
In the presence of catalysts (e.g. halogen products, mercury, nickel, platinum) the rate of decomposition increases and decomposition can occur at even lower temperatures.
Nitrous oxide dissociation is irreversible and exothermic, leading a considerable rise in pressure.
Temperatures above 150◦C (300◦F) shall be avoided by all practical means, to reduce the likelihood of an explosive decomposition of the nitrous oxide.

**Possibility of hazardous reactions:** Violently oxidises organic material.
**Conditions to avoid:** Heat.
**Incompatible materials:** May react violently with combustible materials.
May react violently with reducing agents.
Keep equipment free from oil and grease.
**Hazardous decomposition Products:** under normal conditions of storage and use, hazardous decomposition products should not be produced.

## 11. Toxicological Information

Acute toxicity: Classified criteria are not met.
Inhalation causes narcotic effects.

STOT – single exposure: No known effects from this product.

STOT – repeated exposure: Classification criteria are not met.
At low concentrations:
Neurologic effect
Hemotoxic effect

Target organ(s): Erythrocytes
Kidneys
Liver
Central nervous system

## 12. Ecological Information

**General**
No ecological damage caused by this product
When discharged in large quantities may contribute to greenhouse effect.
Contains greenhouse gas (es) not covered by Regulation EC 842/2006.

## 13. Disposal Considerations

**General**
May be vented to atmosphere in a well-ventilated place.
Discharge to atmosphere in large quantities should be avoided.
Do not discharge into any place where its accumulation could be dangerous.
Contact supplier if guidance is required.



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## 14. Transport Information

**UN number:** 1070
**UN proper shipping name:** NITROUS OXIDE
**Labelling ADR, IMDG, IATA:**


2.2: Non-Flammable. Non-toxic gases
5.1: Oxidising substances.

**Land Transport (ADR/RID)**

| | |
|---|---|
| Class: | 2 |
| Classification code: | 2O |
| Hazard number: | 25 |
| Packing instruction: | P200 |

**Sea Transport (IMDG)**

| | |
|---|---|
| Class/ Div. (Sub. Risk(s)): | 2.2(5.1) |
| Emergency Schedule (EmS) Fire: | F-C |
| Emergency Schedule (EmS) Spillage: | S-W |

**Air Transport (IATA-DGR, ICAO-TI)**

| | |
|---|---|
| Class/ Div. (Sub. risk(s)): | 2.2(5.1) |
| Passenger and Cargo Aircraft: | 200 |
| Cargo Aircraft Only: | 200 |

**Special precautions for user:** 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.
Avoid transport on vehicles where the load space is not separated from the driver's compartment.
Before transporting product containers:
— 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.
— Ensure there is adequate ventilation.

## 15. Regulatory Information

**EU legislation:** None.
**National legislation:** Ensure all national/local regulations are observed.

## 16. Other Information

**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.

**End of document.**



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