



# Safety Data Sheet

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## NITROUS OXIDE

### 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

**Product name** Nitrous Oxide  
**Chemical name/formula** Nitrous Oxide / N<sub>2</sub>O  
**Company identification** See header and footer  
**Emergency phone no.** See footer

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

**Substance/Preparation** Substance  
**Components/Impurities** Contains no other components or impurities, which will influence the classification of the product.  
**CAS No.** 010024-97-2

### 3. HAZARDS IDENTIFICATION

**General**

- Liquefied gas.
- Oxidant; strongly supports combustion.
- May react violently with combustible materials.

### 4. FIRST-AID MEASURES

**Inhalation**

- In high concentrations may cause asphyxiation. Symptoms may include loss of mobility or 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.
- 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/Eye contact**

- Contact with liquid may cause cold burns or frost bite. Spray with water for at least 15 minutes.

**Ingestion**

- Ingestion is not considered a potential route of exposure.

### 5. FIRE-FIGHTING MEASURES

**Specific hazards**

- Supports combustion.
- Exposure to fire may cause containers to rupture or explode.

**Hazardous combustion products**

- If involved in a fire, Nitric Oxide or Nitrogen Dioxide gases, which are toxic and corrosive, may be produced by thermal decomposition.

**Suitable extinguishing media**

- All known extinguishants can be used.

**Specific methods**

- If possible, stop flow of product.
- Move container away or cool with water from a protected position.

**Special protective equipment (for fire fighters)**

- In confined space, use a self-contained breathing apparatus.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**

- Evacuate area.
- Eliminate ignition sources.
- Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
- Ensure adequate air ventilation.

**Environmental precautions**

- Try to stop release.
- Prevent from entering sewers, basements and work pits or any place where its accumulation can be dangerous.

**Clean up methods**

- Ventilate area.

### 7. HANDLING & STORAGE

**General**

- Use no oil or grease.
- Open valve slowly to avoid pressure shock.
- Segregate from flammable gases and other flammable materials in store.
- Suck back of water into the container must be prevented.
- Use only properly specified equipment, which is suitable for this product, its supply pressure and temperature.
- Keep away from ignition sources (including static discharges).
- Keep container below 50°C in a well-ventilated place.
- Due to its anaesthetic effect, N<sub>2</sub>O is often subject to theft and misuse. Store containers in a controlled area.
- Refer to SOXAL's booklet on "safe handling, transport and storage of compressed gas cylinder" or contact SOXAL if in doubt.

### 8. EXPOSURE CONTROLS & PERSONAL PROTECTION

**Exposure limit value**

- 50 ppm PEL Short Term (Singapore Factories Order 1996)

**Personal protection**

- Do not smoke while handling product.
- Ensure adequate ventilation.

### 9. PHYSICAL & CHEMICAL PROPERTIES

**Molecular weight** 44  
**Melting point** - 90.8°C  
**Boiling point** - 88.5°C  
**Critical temperature** 36.4°C  
**Relative density, gas** 1.5 (air = 1)  
**Relative density, liquid** 1.2 (water = 1)

For product and/or safety enquiry, please send, call, fax or log on to:

**SINGAPORE OXYGEN AIR LIQUIDE PTE LTD**  
16, Jalan Buroh, Singapore 619475.

Tel: (65) 6265 3788 or 6265 4555 Fax: (65) 6265 1441 or 6268 8403 Website: [www.soxal.com](http://www.soxal.com) Business Registration No: 197001157D

## NITROUS OXIDE

### 9. PHYSICAL & CHEMICAL PROPERTIES (continue)

Vapour pressure @ 20°C	50.8 Bar
Solubility mg/l water	2.2 mg/l
Appearance/Colour	Colourless gas
Odour	Sweetish. Poor warning properties at high concentrations.
Auto-ignition temperature	Not applicable
Flammability range	Oxidiser
Others	Gas or vapour is heavier than air. May accumulate in confined spaces, at or below ground level.

### 10. STABILITY & REACTIVITY

<b>General</b>	<ul style="list-style-type: none"> <li>▪ May react violently with combustible materials.</li> <li>▪ Thermal decomposition yields toxic products, which can be corrosive in the presence of moisture.</li> <li>▪ May react violently with reducing agents.</li> <li>▪ Violently oxidises organic material.</li> <li>▪ At temperatures over 575°C and at atmospheric pressure, N<sub>2</sub>O decomposes into nitrogen and oxygen.</li> <li>▪ Pressurised N<sub>2</sub>O can also decompose at temperatures equal or greater than 300°C.</li> <li>▪ N<sub>2</sub>O dissociation is irreversible and exothermic, leading to a considerable rise in pressure.</li> </ul>
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### 11. TOXICOLOGICAL INFORMATION

<b>General</b>	<ul style="list-style-type: none"> <li>▪ No known toxicological effects from this product.</li> </ul>
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### 12. ECOLOGICAL INFORMATION

<b>General</b>	<ul style="list-style-type: none"> <li>▪ No known ecological damage caused by this product.</li> <li>▪ Global warming factor is 310.</li> </ul>
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### 13. DISPOSAL CONSIDERATIONS

<b>General</b>	<ul style="list-style-type: none"> <li>▪ Do not discharge into any place where its accumulation could be dangerous.</li> <li>▪ Discharge to atmosphere in large quantities should be avoided.</li> <li>▪ Vent to atmosphere in a well ventilated place.</li> <li>▪ Contact SOXAL if guidance is required.</li> </ul>
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### 14. TRANSPORT INFORMATION

UN No.	1070
Class/Division	2.2 (Non-Flammable Gas)
Subsidiary risk	Oxidiser
UN proper shipping name	Nitrous Oxide, compressed

### IMO/IATA shipping labels



### Other 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 that they are firmly secured and:
  - compliance with applicable regulations;
  - cylinder valve is closed and not leaking;
  - valve outlet cap nut or plug is correctly fitted;
  - valve protection device (where provided) is correctly fitted; and
  - there is adequate ventilation.

### 15. REGULATORY INFORMATION

<b>General</b>	<ul style="list-style-type: none"> <li>▪ Singapore's WSH (General Provisions) Regulations 2006, Sections 42 &amp; 43.</li> <li>▪ Singapore Standards:           <ul style="list-style-type: none"> <li>▪ CP 12:2000 Part 1</li> <li>▪ CP 98:2003</li> <li>▪ SS 152:2003</li> <li>▪ SS 286:1984 Part 1 to Part 5</li> </ul> </li> </ul>
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### Risk and safety phrases

- R8 - Contact with combustible materials may cause fire.
- S9 - Keep container in a well ventilate place.
- S17 - Keep away from combustible materials.

### 16. OTHER INFORMATION

<b>General</b>	<ul style="list-style-type: none"> <li>▪ Ensure all local regulations or legislations are observed.</li> <li>▪ Asphyxiant in high concentrations and this hazard must be stressed before use.</li> <li>▪ Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.</li> </ul>
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