



# MATERIAL SAFETY DATA SHEET



ISO 9001 : 2000 Cert.No. : 622578

## NITROUS OXIDE

### 1 CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Product name	Nitrous Oxide
Chemical name/formula	Oxygen / 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	<ul style="list-style-type: none"><li>▶ Liquefied gas.</li><li>▶ Oxidant; strongly supports combustion.</li><li>▶ may react violently with combustible materials.</li></ul>
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### 4 FIRST-AID MEASURES

Inhalation	<ul style="list-style-type: none"><li>▶ In high concentrations may cause asphyxiation. Symptoms may include loss of mobility or consciousness. Victim may not be aware of asphyxiation.</li><li>▶ In low concentrations, may cause narcotic effects, Symptoms may include dizziness, headache, nausea and loss of coordination.</li><li>▶ Remove victim to uncontaminated area wearing self-contained breathing apparatus.</li><li>▶ Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.</li></ul>
Skin/Eye contact	<ul style="list-style-type: none"><li>▶ Contact with liquid may cause cold burns or frost bite. Spray with water for at least 15 minutes. Consult doctor.</li></ul>
Ingestion	<ul style="list-style-type: none"><li>▶ Ingestion is not considered a potential route of exposure.</li></ul>

### 5 FIRE-FIGHTING MEASURES

Specific hazards	<ul style="list-style-type: none"><li>▶ Supports combustion.</li><li>▶ Exposure to fire may cause containers to rupture or explode.</li></ul>
Hazardous combustion products	<ul style="list-style-type: none"><li>▶ If involved in a fire, Nitric Oxide or Nitrogen Dioxide gases, which are toxic and corrosive, may be produced by thermal decomposition.</li></ul>
Suitable extinguishing media	<ul style="list-style-type: none"><li>▶ All known extinguishants can be used.</li></ul>
Specific methods	<ul style="list-style-type: none"><li>▶ If possible, stop flow of product.</li><li>▶ Move container away or cool with water from a protected position.</li></ul>

Special protective Equipment (for fire fighters) ▶ In confined space, use a self-contained breathing apparatus.

### 6 ACCIDENTAL RELEASE MEASURES

Personal precautions	<ul style="list-style-type: none"><li>▶ Evacuate area.</li><li>▶ Eliminate ignition sources.</li><li>▶ Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.</li><li>▶ Ensure adequate air ventilation.</li></ul>
Environmental Precautions	<ul style="list-style-type: none"><li>▶ Try to stop release.</li><li>▶ Prevent from entering sewers, basements and work pits or any place where its accumulation can be dangerous.</li></ul>
Clean up methods	<ul style="list-style-type: none"><li>▶ Ventilate area</li></ul>

### 7 HANDLING & STORAGE

General	<ul style="list-style-type: none"><li>▶ Use no oil or grease.</li><li>▶ Open valve slowly to avoid pressure shock.</li><li>▶ Segregate from flammable gases and other flammable materials in store.</li><li>▶ Suck back of water into the container must be prevented.</li><li>▶ Use only properly specified equipment, which is suitable for this product, its supply pressure and temperature.</li><li>▶ Keep away from ignition sources (including static discharges).</li><li>▶ Keep container below 50°C in a well-ventilated place.</li><li>▶ Due to its anaesthetic effect, N<sub>2</sub>O is often subject to theft and misuse. Store containers in a controlled area.</li><li>▶ Refer to "safe handling, transport and storage of compressed gas cylinder" or contact AIG if in doubt.</li></ul>
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### 8 EXPOSURE CONTROLS & PERSONAL PROTECTION

Exposure limit value	<ul style="list-style-type: none"><li>▶ 50 ppm PEL Short Term (Singapore Factories Order 1996).</li></ul>
Personal protection	<ul style="list-style-type: none"><li>▶ Do not smoke while handling product.</li><li>▶ Ensure adequate ventilation</li></ul>

### 9 PHYSICAL & CHEMICAL PROPERTIES

Molecular weight	44g/mol
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)
Vapour pressure @20°C	50.8 Bar
Solubility mg/l water	2.2 mg/l

## 9 PHYSICAL & CHEMICAL PROPERTIES (continue)

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

General	<ul style="list-style-type: none"><li>▶ May react violently with combustible materials and reducing agents.</li><li>▶ Thermal decomposition yields toxic products, which can be corrosive in the presence of moisture.</li><li>▶ Violently oxidizes organic materials.</li><li>▶ At temperatures over 575°C and at atmospheric pressure, N<sub>2</sub>O decomposes into nitrogen and oxygen.</li><li>▶ Pressurized 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

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

General	<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

General	<ul style="list-style-type: none"><li>▶ Do not discharge into areas 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 AIG if guidance is required.</li></ul>
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## 14 TRANSPORT INFORMATION

UN No.	1070
Class/Division	2.2 (5.1) (Non-Flammable Gas)
Subsidiary risk	Oxidiser
UN proper shipping name	Nitrous Oxide, compressed
IMO/IATA shipping label	



ASIA INDUSTRIAL GASES PTE LTD  
8, Gul Road, Jurong, Singapore 629341  
Tel: 68614000 Fax: 68617549  
CO. REG. NO.: 197201287D

Other transport information	<ul style="list-style-type: none"><li>▶ Avoid transport on vehicles where the load space is not separated from the driver's compartment.</li><li>▶ 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.</li><li>▶ Before transporting product containers, ensure that they are firmly secured and:<ul style="list-style-type: none"><li>▪ compliance with applicable regulations;</li><li>▪ cylinder valve is closed and not leaking;</li><li>▪ valve outlet cap nut or plug (where provided) is correctly fitted;</li><li>▪ valve protection device (where provided) is correctly fitted and</li><li>▪ there is adequate ventilation.</li></ul></li></ul>
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## 15 REGULATORY INFORMATION

General	<ul style="list-style-type: none"><li>▶ Singapore's Factories Act 2000, Sections 14, 34, 44 &amp; 60A.</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>
Risk and safety phrases	<ul style="list-style-type: none"><li>▶ R8 – Contact with combustible materials may cause fire.</li><li>▶ S9 – Keep container in a well ventilated place.</li><li>▶ S17 – Keep away from combustible materials.</li></ul>

## 16 OTHER INFORMATION

General	<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><li>▶ Details given in this document are believed to be correct at the time of revising.</li><li>▶ 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.</li><li>▶ This safety data sheet is for information purposes only and is subjected to change without notice.</li></ul>
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