



Safety Data Sheet

Nitrous Oxide

Section 1: Product and Company Identification

Middlesex Gases & Technologies

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Product Code: Nitrous Oxide

Section 2: Hazards Identification



Warning

Hazard Classification:

Gases Under Pressure

Hazard Statements:

Contains gas under pressure; may explode if heated

Precautionary Statements

Storage:

Protect from sunlight.
Store in well-ventilated place.

Section 3: Composition/Information on Ingredients

| |
|--------------|
| CAS # |
| 10024-97-2 |

| Chemical Substance | Chemical Family | Trade Names |
|--------------------|-----------------|--|
| NITROUS OXIDE | inorganic, gas | DINITROGEN MONOXIDE; FACTITIOUS AIR; LAUGHING GAS; HYPONITROUS ACID ANHYDRIDE; NITROGEN (I) OXIDE; NITROGEN OXIDE; STCC 4904340; UN 1070; NITROGEN OXIDE (N2O); DINITROGEN OXIDE; NITROUS OXIDE, COMPRESSED; N2O |

Section 4: First Aid Measures

| Skin Contact | Eye Contact | Ingestion | Inhalation | Note to Physicians |
|--|----------------------------------|--|--|----------------------------------|
| If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention. | Flush eyes with plenty of water. | If a large amount is swallowed, get medical attention. | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention. | For inhalation, consider oxygen. |

Section 5: Fire Fighting Measures

| Suitable Extinguishing Media | Products of Combustion | Protection of Firefighters |
|---|------------------------|---|
| Non-flammable. Use suitable extinguishing media for surrounding fire. | Non-flammable | <ul style="list-style-type: none"> ▪ Non-flammable |

Section 6: Accidental Release Measures

| Personal Precautions | Environmental Precautions | Methods for Containment |
|--|------------------------------|--|
| Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Avoid contact with combustible materials. | No adverse effects expected. | Stop leak if possible without personal risk. |

| Methods for Cleanup | Other Information |
|---|-------------------|
| Stop leak, evacuate and ventilate area. | None |

Section 7: Handling and Storage

| Handling | Storage |
|---|--|
| Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.105. | Keep separated from incompatible substances. |

Section 8: Exposure Controls/Personal Protection

| Exposure Guidelines |
|---|
| NITROUS OXIDE: 50 ppm ACGIH TWA 25 ppm (46 mg/m ³) NIOSH recommended TWA (halogenated anesthetic gas) |

Engineering Controls

Handle only in fully enclosed systems.

| Eye Protection | Skin Protection | Respiratory Protection |
|--|--|------------------------|
| For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. | For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing. | Non-flammable |

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

| Physical State | Appearance | Color | Change in Appearance | Physical Form | Odor | Taste |
|----------------|------------|-----------|----------------------|---------------|------------|-------------|
| Gas | Clear | Colorless | N/A | Gas | Sweet odor | Sweet taste |

| Flash Point | Flammability | Partition Coefficient | Autoignition Temperature | Upper Explosive Limits | Lower Explosive Limits |
|---------------|---------------|-----------------------|--------------------------|------------------------|------------------------|
| Not flammable | Not available | Not available | Nonflammable | Nonflammable | Nonflammable |

| Boiling Point | Freezing Point | Vapor Pressure | Vapor Density | Specific Gravity | Water Solubility | pH | Odor Threshold | Evaporation Rate | Viscosity |
|----------------|----------------|------------------|---------------|------------------|------------------|----------------|----------------|------------------|------------------|
| -128 F (-89 C) | -132 F (-91 C) | 760 mmHg @ -88 C | 1.53 (Air=1) | Not applicable | 59% @ 25 C | Not applicable | Not available | Not applicable | 0.0145 cP @ 25 C |

| Molecular Weight | Molecular Formula | Density | Weight per Gallon | Volatility by Volume | Volatility | Solvent Solubility |
|------------------|-------------------|-------------------|-------------------|----------------------|----------------|--|
| 44.01 | N2-O | 1.8122 g/L @ 25 C | Not available | Not applicable | Not applicable | Soluble: Sulfuric acid, alcohol, alkali solutions, ether, oils |

Section 10: Stability and Reactivity

| Stability | Conditions to Avoid | Incompatible Materials |
|--|--|---|
| Stable at normal temperatures and pressure. Decomposes to nitrogen and oxygen at high temperatures | Stable at normal temperatures and pressure. Decomposes to nitrogen and oxygen at high temperatures | Combustible materials, metals, bases, reducing agents, peroxides, metal salts, metal oxides, hydrogen |

| Hazardous Decomposition Products | Possibility of Hazardous Reactions |
|----------------------------------|------------------------------------|
| Oxides of nitrogen | Will not polymerize. |

Section 11: Toxicology Information

Acute Effects

| Oral LD50 | Dermal LD50 | Inhalation |
|---------------|---------------|--|
| Not available | Not available | Nausea, vomiting, symptoms of drunkenness, hyperactivity or drowsiness, hearing loss, suffocation, death |

| Eye Irritation | Skin Irritation | Sensitization |
|-----------------------------------|-----------------------------|---|
| Liquid: frostbite, blurred vision | Liquid: blisters, frostbite | Potentially fatal if inhaled, central nervous system depression, difficulty breathing TERATOGEN/EMBRYOTOXIN - can harm the unborn child, based on human information. |

Chronic Effects

| Carcinogenicity | Mutagenicity | Reproductive Effects | Developmental Effects |
|---|--------------|----------------------|-----------------------|
| IARC: Human Inadequate Evidence, Animal Inadequate Evidence, Group 3 (Anesthetics, volatile); ACGIH: A4 -Not Classifiable as a Human Carcinogen | Available. | Available. | No data |

Section 12: Ecological Information

Fate and Transport

| Eco toxicity | Persistence / Degradability | Bioaccumulation / Accumulation | Mobility in Environment |
|------------------------------|-----------------------------|--------------------------------|-------------------------|
| Fish toxicity: Not available | Not available | Not available | Not available |

| | | | |
|---|--|--|--|
| Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available | | | |
|---|--|--|--|

Section 13: Disposal Considerations

Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

| Proper Shipping Name | ID Number | Hazard Class or Division | Packing Group | Labeling Requirements | Passenger Aircraft or Railcar Quantity Limitations | Cargo Aircraft Only Quantity Limitations | Additional Shipping Description |
|----------------------|-----------|--------------------------|----------------|-----------------------|--|--|---------------------------------|
| Nitrous oxide | UN1070 | 2.2 | Not applicable | 2.2; 5.1 | N/A | N/A | N/A |

Canadian Transportation of Dangerous Goods

| Shipping Name | UN Number | Class | Packing Group / Risk Group |
|---------------|-----------|----------|----------------------------|
| Nitrous oxide | UN1070 | 2.2; 5.1 | Not applicable |

Section 15: Regulatory Information

U.S. Regulations

| CERCLA Sections | SARA 355.30 | SARA 355.40 |
|-----------------|----------------|----------------|
| Not regulated. | Not regulated. | Not regulated. |

SARA 370.21

| Acute | Chronic | Fire | Reactive | Sudden Release |
|-------|---------|------|----------|----------------|
| Yes | No | No | No | Yes |

SARA 372.65

Not regulated.

OSHA Process Safety

Not regulated.

State Regulations

CA Proposition 65

Not regulated.

Canadian Regulations

WHMIS Classification

A,C

National Inventory Status

| US Inventory (TSCA) | TSCA 12b Export Notification | Canada Inventory (DSL/NDSL) |
|----------------------|------------------------------|-----------------------------|
| Listed on inventory. | Not listed. | Not determined. |

Section 16: Other Information

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| NFPA Rating |
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|------------------------------|
| HEALTH=1 FIRE=0 REACTIVITY=0 |
|------------------------------|

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard