Section 1. Chemical product and company identification

Product Name: Oxidizing Gas Mixture: Nitrous Oxide 99% / Sulfer Dioxide 50-100ppm (Nitrous Plus)

Supplier: AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Product use: Synthetic/Analytical chemistry.

MSDS#: 005200


Section 2. Hazards identification

Physical state: Gas.

Emergency overview: Warning!
OXIDIZER.
CONTENTS UNDER PRESSURE.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
REPRODUCTIVE SYSTEM, RESPIRATORY TRACT, CENTRAL NERVOUS SYSTEM.
POSSIBLE CANCER HAZARD
CONTAINS MATERIAL WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA.
Contact with combustible material may cause fire.

Do not puncture or incinerate container. Store in tightly closed container. Avoid contact with combustible materials. Risk of cancer depends on duration and level of exposure.
Contact with rapidly expanding gases can cause frostbite.

Routes of entry: Inhalation

Potential acute health effects:

Eyes: No known significant effects or critical hazards.
Skin: No known significant effects or critical hazards.
Inhalation: Acts as a simple asphyxiant.
Ingestion: Ingestion is not a normal route of exposure for gases

Potential chronic health effects:

CARCINOGENIC EFFECTS: Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [nitrous oxide].
MUTAGENIC EFFECTS: Not available.
TERATOGIC EFFECTS: Not available.

Medical conditions aggravated by overexposure: Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

See toxicological Information (section 11)

Section 3. Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS number</th>
<th>% Volume</th>
<th>Exposure limits</th>
</tr>
</thead>
</table>
TWA: 90 mg/m³ 8 hour(s). Form: All forms
TWA: 50 ppm 8 hour(s). Form: All forms
NIOSH REL (United States, 12/2001). Notes:
TWA over the time exposed Note: REL for exposure to waste anesthetic gas.
TWA: 46 mg/m³ 10 hour(s). Form: All forms |
Oxidizing Gas Mixture: Nitrous Oxide 99% / Sulfer Dioxide 50-100ppm (Nitrous Plus)

Sulfur Dioxide 7446-09-5 0.005 - 0.01

TWA: 25 ppm  10 hour(s). Form: All forms
STEL: 13 mg/m³  15 minute(s). Form: All forms
STEL: 5 ppm  15 minute(s). Form: All forms
TWA: 5.2 mg/m³  8 hour(s). Form: All forms
TWA: 2 ppm  8 hour(s). Form: All forms
NIOSH REL (United States, 6/2001).
STEL: 13 mg/m³  15 minute(s). Form: All forms
STEL: 5 ppm  15 minute(s). Form: All forms
TWA: 5 mg/m³  10 hour(s). Form: All forms
TWA: 2 ppm  10 hour(s). Form: All forms
OSHA PEL (United States, 6/1993).
TWA: 13 mg/m³  8 hour(s). Form: All forms
TWA: 5 ppm  8 hour(s). Form: All forms

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training. If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin contact
In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Frostbite
Try to warm up the frozen tissues and seek medical attention.

Inhalation
If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Section 5. Fire fighting measures

Flammability of the product: Non-flammable.
Products of combustion: These products are nitrogen oxides (NO, NO₂...).
Fire fighting media and instructions: Use an extinguishing agent suitable for surrounding fires.

If involved in fire, shut off flow immediately if it can be done without risk. Apply water from a safe distance to cool container and protect surrounding area. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire.

Special protective equipment for fire-fighters: Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions: Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Do not touch or walk through spilled material.

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
Section 7. Handling and storage

Handling: Store in tightly closed container. Avoid contact with combustible materials. Do not puncture or incinerate container. High pressure gas. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure Controls, Personal Protection

Engineering controls: Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands: Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill: A self-contained breathing apparatus should be used to avoid inhalation of the product. Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight: Not applicable.
Molecular formula: Not applicable.
Boiling/condensation point: Not available.
Melting/freezing point: -90.99°C (-131.8°F) based on data for: nitrous oxide.
Critical temperature: The lowest known value is 36.6°C (97.9°F) (nitrous oxide).
Vapor density: The highest known value is 1.53 (Air = 1) (nitrous oxide).
Specific Volume (ft³/lb): Not applicable.
Gas Density (lb/ft³): The only known value is 0.115 (nitrous oxide).

Section 10. Stability and reactivity

Stability and reactivity: The product is stable.
Incompatibility with various substances: Highly reactive with reducing agents, combustible materials.
Section 11. Toxicological information

### Ingredient name

**Sulfur Dioxide**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Route</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50</td>
<td>2520 ppm (1 hour(s))</td>
<td>Inhalation</td>
<td>Rat</td>
</tr>
<tr>
<td>LC50</td>
<td>3000 ppm (0.5 hour(s))</td>
<td>Inhalation</td>
<td>Mouse</td>
</tr>
</tbody>
</table>

### Chronic effects on humans

**CARCINOGENIC EFFECTS** Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [nitrous oxide].
Contains material which causes damage to the following organs: the reproductive system, upper respiratory tract, central nervous system (CNS).

### Other toxic effects on humans

No specific information is available in our database regarding the other toxic effects of this material for humans.

### Specific effects

- **Carcinogenic effects**: Contains material which may cause cancer based on animal data. Risk of cancer depends on duration and level of exposure.
- **Mutagenic effects**: No known significant effects or critical hazards.
- **Reproduction toxicity**: No known significant effects or critical hazards.

Section 12. Ecological information

- **Products of degradation**: These products are nitrogen oxides (NO, NO₂...).
- **Environmental fate**: Not available.
- **Environmental hazards**: No known significant effects or critical hazards.
- **Toxicity to the environment**: Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

Section 14. Transport information

<table>
<thead>
<tr>
<th>Regulatory information</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Class</th>
<th>Packing group</th>
<th>Label</th>
<th>Additional information</th>
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<td>UN3156</td>
<td>COMPRESSED GAS, OXIDIZING, N.O.S.</td>
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<td>2.2</td>
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<td>-</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Passenger</td>
</tr>
</tbody>
</table>
### Section 15. Regulatory information

**United States**

**U.S. Federal regulations**
- TSCA 8(b) inventory: sulphur dioxide; nitrous oxide
- SARA 302/304/311/312 extremely hazardous substances: No products were found.
- SARA 302/304 emergency planning and notification: No products were found.
- SARA 302/304/311/312 hazardous chemicals: nitrous oxide
- SARA 311/312 MSDS distribution - chemical inventory - hazard identification: nitrous oxide: Fire hazard, Sudden Release of Pressure, Delayed (Chronic) Health Hazard
- Clean Water Act (CWA) 307: No products were found.
- Clean Water Act (CWA) 311: No products were found.
- Clean air act (CAA) 112 accidental release prevention: sulphur dioxide
- Clean air act (CAA) 112 regulated flammable substances: No products were found.
- Clean air act (CAA) 112 regulated toxic substances: sulphur dioxide

**State regulations**
- Pennsylvania RTK: sulphur dioxide: (environmental hazard, generic environmental hazard); nitrous oxide: (generic environmental hazard)
- Massachusetts RTK: sulphur dioxide; nitrous oxide
- New Jersey: sulphur dioxide; nitrous oxide

**Canada**

**WHMIS (Canada)**
- Class A: Compressed gas.
- Class D-2A: Material causing other toxic effects (VERY TOXIC).
- CEPA DSL: sulphur dioxide; nitrous oxide

### Section 16. Other information

**United States**

**Label Requirements**
- OXIDIZER.
- CONTENTS UNDER PRESSURE.
- CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: REPRODUCTIVE SYSTEM, RESPIRATORY TRACT, CENTRAL NERVOUS SYSTEM.
- POSSIBLE CANCER HAZARD
- CONTAINS MATERIAL WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA.
- CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.

**Canada**

**Label Requirements**
- Class A: Compressed gas.
- Class D-2A: Material causing other toxic effects (VERY TOXIC).

**Hazardous Material Information System (U.S.A.)**

<table>
<thead>
<tr>
<th>Health</th>
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<tbody>
<tr>
<td>Fire hazard</td>
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<tr>
<td>Reactivity</td>
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<tr>
<td>Personal protection</td>
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</tbody>
</table>
**Oxidizing Gas Mixture: Nitrous Oxide 99% / Sulfer Dioxide 50-100ppm (Nitrous Plus)**

**National Fire Protection Association (U.S.A.)**

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**Notice to reader**

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.