

SECTION: 1. Product and company identification

1.1. Product identifier

Product form : Substance
 Name : Nitrous oxide, compressed
 CAS No : 10024-97-2
 Formula : N2O
 Other means of identification : Nitrous oxide

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Industrial use. Use as directed.

1.3. Details of the supplier of the safety data sheet

: Airtec Group of Companies.
 : Refrigeration and Oxygen Company.
 : P.O box Safat **13006**,
 : Kuwait
 : www.airtecqulf.com

1.4. Emergency telephone number

Emergency number : Onsite Emergency: +965-1844-844
 Fax no : +965-2484-3020
 Email : info@rocq8.com

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

GHS-US classification

Ox. Gas 1 H270
 Liquefied gas H280
 STOT SE 3 H336

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) : DANGER

Hazard statements (GHS-US) : H270 - MAY CAUSE OR INTENSIFY FIRE; OXIDIZER
 H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED
 H336 - MAY CAUSE DROWSINESS OR DIZZINESS
 OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION
 CGA-HG01 - MAY CAUSE FROSTBITE

Precautionary statements (GHS-US) : P202 - Do not handle until all safety precautions have been read and understood
 P220 - Keep/Store away from combustible materials, clothing
 P244 - Keep reduction valves/valves and fittings free from oil and grease
 P261 - Avoid breathing gas
 P262 - Do not get in eyes, on skin, or on clothing
 P271+P403 - Use and store only outdoors or in a well-ventilated place
 P370+P376 - In case of fire: Stop leak if safe to do so
 CGA-PG05 - Use a back flow preventive device in the piping
 CGA-PG20+CGA-PG10 - Use only with equipment of compatible materials of construction and

- : rated for cylinder pressure
- CGA-PG22 - Use only with equipment cleaned for oxygen service
- CGA-PG21 - Open valve slowly
- CGA-PG06 - Close valve after each use and when empty
- CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)

2.3. Other hazards

- Other hazards not contributing to the classification : Asphyxiant in high concentrations
- Contact with liquid may cause cold burns/frostbite.

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/Information on ingredients

3.1. Substance

- Name : Nitrous oxide, compressed
- CAS No : 10024-97-2

| Name | Product identifier | % |
|---------------|---------------------|------------|
| Nitrous oxide | (CAS No) 10024-97-2 | 99.5 - 100 |

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. . If breathing is difficult, trained personnel should give oxygen. . If not breathing, give artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.
- First-aid measures after skin contact : The liquid may cause frostbite. For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105°F (41°C). Water temperature should be tolerable to normal skin. Maintain skin warming for at least 15 minutes or until normal coloring and sensation have returned to the affected area. In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible.
- First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.. Consult an eye specialist immediately.
- First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Oxidizing agent; vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion.
- Explosion hazard : If venting or leaking gas catches fire, do not extinguish flames. Vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Contact with combustible materials such as oil, grease, and other hydrocarbon products, especially in the presence of ignition sources such as pilot lights, other flames, smoking, sparks, heaters, electrical equipment, and static discharges may cause fire or explosion. Explosive atmospheres may linger. Before entering an area, especially a confined area, check the atmosphere with an appropriate device.
- Reactivity : No reactivity hazard other than the effects described in sub-sections below.

5.3. Advice for firefighters

- | | |
|--|--|
| Firefighting instructions | : Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection. |
| Special protective equipment for fire fighters | : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus. Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. |
| Specific methods | : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems Stop flow of product if safe to do so Use water spray or fog to knock down fire fumes if possible. |
| Other information | : Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.) Oxidizing agent; vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion Smoking, flames, and electric sparks are potential explosion hazards. |

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- | | |
|------------------------------------|--|
| General measures | DANGER: High-pressure, oxidizing gas. Evacuate personnel to a safe area. Appropriate self-contained breathing apparatus may be required. Approach suspected leak area with caution. Remove all sources of ignition. Vapor can spread from spill. Contact with flammable materials may cause fire or explosion. Ventilate area or move container to a well-ventilated area. Before entering the area, especially a confined area, check the atmosphere with an appropriate device. |
| 6.1.1. For non-emergency personnel | No additional information available |
| 6.1.2. For emergency responders | No additional information available |

6.2. Environmental precautions

Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

6.3. Methods and material for containment and cleaning up

No additional information available

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store only where temperature will not exceed 125°F (52°C). Post "No Smoking/No Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g. NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| Nitrous oxide, compressed (10024-97-2) | | |
|--|---------------------|--------|
| ACGIH | ACGIH TLV-TWA (ppm) | 50 ppm |
| USA OSHA | Not established | |
| Nitrous oxide (10024-97-2) | | |
| ACGIH | ACGIH TLV-TWA (ppm) | 50 ppm |

8.2. Exposure controls

Appropriate engineering controls : Use a local exhaust system, if necessary, to prevent oxygen deficiency and to keep hazardous fumes and gases below all applicable limits in the worker's breathing zone. **MECHANICAL ENGINEERING CONTROLS:** Not recommended as a primary ventilation system to control worker's exposure. **USE ONLY IN A CLOSED SYSTEM.** An explosion-proof, corrosion-resistant, forced-draft fume hood is preferred.

Hand protection : Wear working gloves when handling gas containers.

Eye protection : Wear safety glasses with side shields. Wear safety glasses with side shields or goggles when transfilling or breaking transfer connections. Wear goggles and a face shield when transfilling or breaking transfer connections.

| | |
|---------------------------------|--|
| Respiratory protection | : When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA). |
| Thermal hazard protection | : Wear cold insulating gloves when transfilling or breaking transfer connections. |
| Environmental exposure controls | : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment. |
| Other information | : Consider the use of flame resistant safety clothing. Wear safety shoes while handling containers. |

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---|
| Physical state | : Gas |
| Appearance | : Colorless, non-flammable gas. |
| Molecular mass | : 44 g/mol |
| Color | : Colorless. |
| Odor | : Sweetish. |
| Odor threshold | : Odor threshold is subjective and inadequate to warn for overexposure. |
| pH | : Not applicable. |
| Relative evaporation rate (butyl acetate=1) | : No data available |
| Relative evaporation rate (ether=1) | : Not applicable. |
| Melting point | : -90.81 °C |
| Freezing point | : No data available |
| Boiling point | : -88.5 °C |
| Flash point | : Not applicable. |
| Critical temperature | : 36.4 °C |
| Auto-ignition temperature | : Not applicable. |
| Decomposition temperature | : 650 °C |
| Flammability (solid, gas) | : No data available |
| Vapor pressure | : 5080 kPa |
| Critical pressure | : 7255 kPa |
| Relative vapor density at 20 °C | : No data available |
| Relative density | : 1.2 |
| Density | : 0.785 g/cm ³ (at 20 °C) |
| Relative gas density | : 1.5 |
| Solubility | : Water: 2.2 mg/l |
| Log Pow | : Not applicable. |
| Log Kow | : Not applicable. |
| Viscosity, kinematic | : Not applicable. |
| Viscosity, dynamic | : Not applicable. |
| Explosive properties | : Not applicable. |
| Oxidizing properties | : Oxidizer. |
| Explosion limits | : Non flammable. |

9.2. Other information

| | |
|------------------------|--|
| Gas group | : Liquefied gas |
| Additional information | : Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level |

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions. 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. At temperatures over 575°C and at atmospheric pressure, nitrous oxide decomposes into nitrogen and oxygen. Pressurized nitrous oxide can also decompose at temperatures equal or greater than 300°C. Nitrous oxide dissociation is irreversible and exothermic, leading to a considerable rise in pressure.

10.3. Possibility of hazardous reactions

Violently oxidizes organic material.

10.4. Conditions to avoid

Heat.

10.5. Incompatible materials

Flammable materials, Hydrocarbons, Avoid oil, grease and all other combustible materials, Asphalt, Ethers, Alcohols, Acids, and Aldehydes. Alkali metals, Boron (B), tungsten carbide, and powdered aluminum.

10.6. Hazardous decomposition products

Nitrous oxide decomposes explosively at 1202°F (650°C) into two parts Nitrogen and one part oxygen. In the presence of catalytic surfaces such as Silver, Platinum (Pt), Cobalt (Co), and Copper or nickel oxide, this reaction occurs at lower temperatures.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Nitrous oxide, compressed (f)10024-97-2

| | |
|---------------------------|--------------|
| LC50 inhalation rat (ppm) | > 250 ppm/4h |
|---------------------------|--------------|

Nitrous oxide (10024-97-2)

| | |
|---------------------------|--------------|
| LC50 inhalation rat (ppm) | > 250 ppm/4h |
|---------------------------|--------------|

Skin corrosion/irritation : Not classified

pH: Not applicable.

Serious eye damage/irritation : Not classified

pH: Not applicable.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : MAY CAUSE DROWSINESS OR DIZZINESS.

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No data available. No ecological damage caused by this product.

12.2. Persistence and degradability

| | |
|---|-------------------------------------|
| Nitrous oxide, compressed (10024-97-2) | |
| Persistence and degradability | Not applicable for inorganic gases. |
| Nitrous oxide (10024-97-2) | |
| Persistence and degradability | Not applicable for inorganic gases. |

12.3. Bioaccumulative potential

| | |
|---|-------------------------------------|
| Nitrous oxide, compressed (10024-97-2) | |
| Log Pow | Not applicable. |
| Log Kow | Not applicable. |
| Bioaccumulative potential | No data available. |
| Nitrous oxide (10024-97-2) | |
| Log Pow | Not applicable for inorganic gases. |
| Bioaccumulative potential | No data available. |

12.4. Mobility in soil

| | |
|---|---|
| Nitrous oxide, compressed (10024-97-2) | |
| Mobility in soil | No data available. |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Nitrous oxide (10024-97-2) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |

12.5. Other adverse effects

| | |
|----------------------------------|---|
| Effect on ozone layer | : None |
| Global warming potential [CO2=1] | : 298 |
| Effect on the global warming | : When discharged in large quantities may contribute to the greenhouse effect |

SECTION 13: Disposal considerations

13.1. Waste treatment methods

| | |
|--------------------------------|--|
| Waste treatment methods | : Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required. |
| Waste disposal recommendations | : Do not attempt to dispose of residual or unused quantities. Return container to supplier. |

SECTION 14: Transport information

| | |
|--------------------------------|---|
| In accordance with DOT | |
| Transport document description | : UN1070 Nitrous oxide, 2.2 |
| UN-No.(DOT) | : UN1070 |
| Proper Shipping Name (DOT) | : Nitrous oxide |
| Class (DOT) | : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115 |
| Hazard labels (DOT) | : 2.2 - Non-flammable gas 5.1 - Oxidizer |



| | |
|---|---|
| HS Code | : 2811.29.90 |
| DOT Special Provisions (49 CFR 172.102) | : A14 - This material is not authorized to be transported as a limited quantity or consumer commodity in accordance with 173.306 of this subchapter when transported aboard an aircraft |

Additional information

| | |
|---------------------------------------|---|
| Emergency Response Guide (ERG) Number | : 122 (UN1070) |
| Other information | : No supplementary information available. |

Special transport precautions : 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 there is adequate ventilation.
- 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.

Transport by sea

UN-No. (IMDG) : 1070
 Proper Shipping Name (IMDG) : NITROUS OXIDE
 Class (IMDG) : 2 - Gases
 MFAG-No : 122

Air transport

UN-No. (IATA) : 1070
 Proper Shipping Name (IATA) : Nitrous oxide
 Class (IATA) : 2
 Civil Aeronautics Law : Gases under pressure/Gases nonflammable nontoxic under pressure

SECTION 15: Regulatory information

15.1. US Federal regulations

| Nitrous oxide, compressed (10024-97-2) | |
|---|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| SARA Section 311/312 Hazard Classes | Delayed (chronic) health hazard Fire hazard Immediate (acute) health hazard Sudden release of pressure hazard All components of this product are listed on the Toxic Substances Control Act (TSCA) inventory. This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. |

15.2. International regulations

CANADA

| |
|---|
| Nitrous oxide, compressed (10024-97-2) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Nitrous oxide (10024-97-2) |
| Listed on the Canadian DSL (Domestic Substances List) |

EU-Regulations

| |
|--|
| Nitrous oxide, compressed (10024-97-2) |
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

15.2.2. National regulations

Nitrous oxide, compressed (10024-97-2)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on the Canadian IDL (Ingredient Disclosure List)
 Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

Nitrous oxide, compressed(10024-97-2)

| | |
|---|---|
| U.S. - California - Proposition 65 - Carcinogens List | No |
| U.S. - California - Proposition 65 - Developmental Toxicity | Yes |
| U.S. - California - Proposition 65 - Reproductive Toxicity - Female | Yes |
| U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No |
| State or local regulations | U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List |

California Proposition 65 - This product contains, or may contain, trace quantities of a substance(s) known to the state of California to cause cancer, developmental and/or reproductive harm

Nitrous oxide (10024-97-2)

| U.S. - California - Proposition 65 - Carcinogens List | U.S. - California - Proposition 65 - Developmental Toxicity | U.S. - California - Proposition 65 - Reproductive Toxicity - Female | U.S. - California - Proposition 65 - Reproductive Toxicity - Male | Non-significant risk level (NSRL) |
|---|---|---|---|-----------------------------------|
| No | Yes | Yes | No | |

Nitrous oxide (10024-97-2)

U.S. - Massachusetts - Right To Know List
 U.S. - New Jersey - Right to Know Hazardous Substance List
 U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Other information

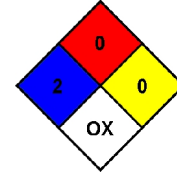
: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product

Airtec asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information

The opinions expressed herein are those of qualified experts within Airtec, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Airtec, Inc, it is the user's obligation to determine the conditions of safe use of the product

Airtec SDSs are furnished on sale or delivery by Airtec or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Airtec sales representative.

| | |
|----------------------|--|
| NFPA health hazard | : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given. |
| NFPA fire hazard | : 0 - Materials that will not burn. |
| NFPA reactivity | : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water. |
| NFPA specific hazard | : OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire. |



HMIS III Rating

| | |
|--------------|---|
| Health | : 1 Slight Hazard - Irritation or minor reversible injury |
| Flammability | : 0 Minimal Hazard |
| Physical | : 3 Serious Hazard |

Use proper connections; do not use adapters. Do not force fit!!

DISCLAIMER

The information and recommendations in this Safety Data Sheet relate only to the specific material mentioned herein and do not relate to use otherwise ie.in combination with any other material or in any process. The information and recommendations herein are taken from our extensive experiences and the data contained in recognized references and believed by us to be true. Airtec group of companies make no warranties either expressed or implied with respect there to and assume no liability in connection with the use of such information and recommendation.