

## Praxair Material Safety Data Sheet

### 1. Chemical Product and Company Identification

<b>Product Name:</b> Nitrous Oxide/Sulphur Dioxide Mixture	<b>Trade Name:</b> Nitrous Oxide/Sulphur Dioxide Mixture
<b>Product Use:</b> Many.	
<b>Chemical Name:</b> Nitrogen Oxide, Sulphur Dioxide Mix	<b>Synonym:</b> Dinitrogen Monoxide, Nitrogen (1) Oxide, Factitious Air, Hyponitrous Acid Anhydride, Laughing Gas
<b>Chemical Formula:</b> Not applicable.	<b>Chemical Family:</b> Not applicable.
<b>Telephone:</b> <b>Emergencies:</b> * 1-800-363-0042	<b>Supplier /Manufacture:</b> Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2
	<b>Phone:</b> 905-803-1600 <b>Fax:</b> 905-803-1682

*\*Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

### 2. Composition and Information on Ingredients

INGREDIENTS	% (VOL)	CAS NUMBER	LD <sub>50</sub> (Species & Routes)	LC <sub>50</sub> (Rat, 4 hrs.)	TLV-TWA (ACGIH)
Nitrous oxide	99.0001 - 99.9999	10024-97-2	Not available	Not available	50 ppm
Sulphur dioxide	0.0001 - 0.9999	7446-09-5	Not available	1260 ppm	0.25 ppm STEL

### 3. Hazards Identification

#### Emergency Overview

**WARNING!** High-pressure, oxidizing gas. Vigorously accelerates combustion. Can cause rapid suffocation. Can cause anesthetic effects. May cause dizziness and drowsiness. May cause nervous system and blood cell damage. Reproductive hazard. Self-contained breathing apparatus may be required by rescue workers.

**ROUTES OF EXPOSURE:** Absorbed through skin. Eye contact. Inhalation. Ingestion.

#### EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

**INHALATION:** May cause excitation, euphoria, dizziness, drowsiness, incoordination, and narcosis. Exposure to concentrations of 50% and greater will produce clinical anaesthesia. High concentrations may cause asphyxia and death. This mixture contains Sulphur dioxide added as an odorizing agent. Sulfur Dioxide is a highly irritating gas that readily elicits respiratory reflexes. It is extremely irritating to the eyes, throat and respiratory tract.

**SKIN CONTACT:** Cryogenic burns (similar to severe frostbite) may occur as a result of the rapid evaporation of the liquefied gas.

**SKIN** No evidence of adverse effects from available information.

**ABSORPTION:**

**SWALLOWING:** An unlikely route of exposure. This product is a gas at normal temperature and pressure.

**EYE CONTACT:** Cryogenic burns to the eyes may occur as a result of contact with the liquefied gas.

**EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:**

Metabolic injury to the nervous system has resulted from frequent exposure to anaesthetic concentrations of Nitrous Oxide. Complaints include numbness, tingling of hands and legs, loss of feeling in fingers, poor balance, and muscular weakness.

**OTHER EFFECTS OF OVEREXPOSURE:**

Exposure to this product has produced embryofetal toxicity in laboratory animals as evidenced by reduced fetal weight, delayed ossification, and increased incidence of visceral and skeletal variations. Exposure to this product may be associated with an increased incidence of abortion in humans. Single prolonged exposure to high concentrations of this material has resulted in bone marrow injury and adverse effects on the blood.

**MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:**

Haemostatic gases in general, and Nitrous Oxide in particular, may suppress immunological function when administered for anaesthetic purpose. This may reduce the resistance to infection and other immuno-dependent disease process.

**SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:**

None.

**CARCINOGENICITY:**

Not listed as carcinogen by OSHA, NTP or IARC.

**4. First Aid Measures**

**INHALATION:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

**SKIN CONTACT:**

For exposure to liquid, immediately warm frostbite area with warm water not to exceed 41 C. In case of massive exposure, remove contaminated clothing while showering with warm water. Call a physician.

**SWALLOWING:**

This product is a gas at normal temperature and pressure.

**EYE CONTACT:**

For contact with the liquid, immediately flush eyes thoroughly with warm water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, immediately.

**NOTES TO PHYSICIAN:**

*Nitrous Oxide may cause vitamin B12 deficiency. Megaloblastic anemia and nervous system disorders can occur as a result of this chemically induced deficiency.*

**5. Fire Fighting Measures**

**FLAMMABLE :** No. **IF YES, UNDER WHAT CONDITIONS?** Not applicable.

**FLASH POINT (test method)** Not applicable. **AUTOIGNITION TEMPERATURE** Not applicable.

Product Name: Nitrous Oxide/Sulphur  
Dioxide Mixture

MSDS# E-6815-E

Date: Oct. 15, 2013

**FLAMMABLE LIMITS  
IN AIR, % by volume:**

**LOWER:** Not applicable.

**UPPER:** Not applicable.

**EXTINGUISHING MEDIA:**

Oxidizing agent. May accelerate combustion. Use media appropriate for surrounding fire.

**SPECIAL FIRE FIGHTING PROCEDURES:**

**WARNING** Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk. Self-contained breathing apparatus may be required by rescue workers. If containers are leaking, reduce vapours with water spray or fog. Shut off leak if without risk. Move containers away from fire area if without risk.

**UNUSUAL FIRE AND EXPLOSION HAZARD:**

Oxidizing agent, may accelerate combustion. Contact with flammable materials may cause fire or explosion. Container may rupture due to heat of fire. No part of a container should be subjected to a temperature higher than 52 C. Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperatures.

**HAZARDOUS COMBUSTION PRODUCTS:**

See section 10.

**SENSITIVITY TO IMPACT:**

Avoid impact against container.

**SENSITIVITY TO STATIC DISCHARGE:**

Possible, see "Unusual Fire and Explosion Hazards" section.

## 6. Accidental Release Measures

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

**WARNING!** Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Contact with flammable materials may cause fire or explosion. Reduce vapours with fog or fine water spray. Shut off leak if without risk. Ventilate area of leak or move leaking container to well ventilated area. Flammable vapours may spread from spill. Before entering area, especially confined areas, check atmosphere with appropriate device.

**WASTE DISPOSAL METHOD:**

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

## 7. Handling and Storage

**PRECAUTIONS TO BE TAKEN IN STORAGE:**

Store and use with adequate ventilation. Separate flammable cylinders from oxygen, chlorine, and other oxidizers by at least 6.1 m or use a barricade of non-combustible material. This barricade should be at least 1.53 m high and have a fire resistance rating of at least ½ hour. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. All electrical equipment in storage areas must be explosion-proof. Storage areas must meet national electric codes for Class 1 hazardous areas. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

**PRECAUTIONS TO BE TAKEN IN HANDLING:**

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. 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. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, *Safe Handling of Compressed Gases in Containers*, available from the CGA. Refer to Section 16 for the address and phone number along with a list of other available publications.

**OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:**

**HIGH-PRESSURE, OXIDIZING GAS** Use piping and equipment adequately designed to withstand pressures to be encountered. **Vigorously accelerates combustion.** Keep oil, grease, and combustibles away. **Store and use with adequate ventilation.** Close valve after each use; keep closed even when empty. **Never work on a pressurized system.** If there is a leak, close the cylinder valve. Blow the system down in an environmentally safe manner in compliance with all federal, provincial, and local laws, then repair the leak. **Never allow a compressed gas cylinder to become part of an electrical circuit.** Electric arcs weaken cylinder metal and can cause catastrophic failure.

**8. Exposure Controls/Personal Protection**

**VENTILATION/ENGINEERING CONTROLS:**

**LOCAL EXHAUST:** Acceptable. See SPECIAL.

**MECHANICAL (general):** Inadequate. See SPECIAL.

**SPECIAL:** Use only in a closed system.

**OTHER:** Inadequate. See SPECIAL.

**PERSONAL PROTECTION:**

**RESPIRATORY PROTECTION:** For concentrations up to 10 times the applicable exposure limit any NIOSH/MSHA approved supplied air respirator is recommended. Up to 50 times the TLV, a NIOSH/MSHA approved respirator with a full face piece or self-contained breathing apparatus is recommended. For higher concentrations use only self contained breathing apparatus operated in the pressure demand mode. Select in accordance with the provincial regulations or guidelines. Selection should also be based on the current CSA standards Z94.4, "Selection care and use of respirators". Respirators should be approved by NIOSH/MSHA.

**SKIN PROTECTION:** Preferred for cylinder handling.

**EYE PROTECTION:** Wear safety glasses when handling cylinders.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

**OTHER PROTECTIVE EQUIPMENT:** Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

### 9. Physical and Chemical Properties

<b>PHYSICAL STATE:</b> Gas. Liquid.	<b>FREEZING POINT:</b> -90.8	<b>pH:</b> Not available.
<b>BOILING POINT</b> -88.5 C	<b>VAPOUR PRESSURE</b> 754 psig	<b>MOLECULAR WEIGHT:</b> 44.01
<b>SPECIFIC GRAVITY:</b> 1.226 @ -89 C LIQUID ( Water = 1)	<b>SOLUBILITY IN WATER,</b> Slight.	
<b>SPECIFIC GRAVITY:</b> 1.53 @ 20 C VAPOUR (air = 1)	<b>EVAPORATION RATE</b> Gas : Not applicable. (Butyl Acetate=1): Liquid: High.	<b>COEFFICIENT OF WATER/OIL DISTRIBUTION:</b> Not applicable.
<b>VAPOUR DENSITY:</b> (g/ml) 0.00195 (@ 21.1 C)	<b>% VOLATILES BY VOLUME:</b> 100	<b>ODOUR THRESHOLD:</b> Not available.

**APPEARANCE & ODOUR:** Colourless gas at normal temperature and pressure. Pungent odour.  
NOTE: This mix is untested, however, the physical data is that for pure Nitrous Oxide.

### 10. Stability and Reactivity

<b>STABILITY:</b>	The product is stable.
<b>CONDITIONS OF CHEMICAL INSTABILITY:</b>	See Section 7.
<b>INCOMPATIBILITY (materials to avoid):</b>	Oils, greases, flammable materials, alkali metals, aluminum, boron, tungsten carbide.
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	Nitrous oxide decomposes explosively at high temperature forming a mixture of Nitrogen and Oxygen. This reaction will occur at lower temperatures in the presence of catalytic surfaces such as silver, platinum, cobalt, copper oxides or nickel oxides.
<b>HAZARDOUS POLYMERIZATION:</b>	Will not occur.
<b>CONDITIONS OF REACTIVITY:</b>	None.

### 11. Toxicological Information

See section 3.

### 12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

### 13. Disposal Considerations

**WASTE DISPOSAL METHOD:**

Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

### 14. Transport Information

**TDG/IMO SHIPPING NAME:**

Compressed gas, oxidizing, n.o.s.(nitrous oxide)

**HAZARD CLASS:** CLASS 2.2 (5.1): Non-flammable, non-corrosive, non-toxic and oxidizing material.

**IDENTIFICATION #:**

UN3156

**PRODUCT REPORTABLE QUANTITY (PRQ):**

Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more

**SHIPPING LABEL(s):** Special Oxidizer with Class 2 at bottom

**PLACARD (when required):** Special Oxidizer with Class 2 at bottom

**SPECIAL SHIPPING INFORMATION:**

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

### 15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

**DSL (Canada)** This product is on the DSL list

**WHMIS (Canada)** CLASS A: Compressed gas.  
CLASS C: Oxidizing material.  
CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**International Regulations**

**EINECS** Not available.

**DSCL (EEC)** R8- Contact with combustible material may cause fire.

**International Lists** No products were found.

### 16. Other Information

**MIXTURES:**

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to 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 make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

**HAZARD RATING SYSTEM:**

**HMIS RATINGS:**

HEALTH 1\*

FLAMMABILITY 0

Product Name: Nitrous Oxide/Sulphur  
Dioxide Mixture

MSDS# E-6815-E

Date: Oct. 15, 2013

## PHYSICAL HAZARD 2

### STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

<b>THREADED:</b>	CGA-660
<b>PIN-INDEXED YOKE:</b>	Not applicable.
<b>ULTRA-HIGH-INTEGRITY CONNECTION:</b>	Not applicable.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

AV-1	Safe Handling and Storage of Compressed Gas
P-1	Safe Handling of Compressed Gases in Containers
V-1	Compressed Gas Cylinder Valve Inlet and Outlet Connections
V-7	Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
---	Handbook of Compressed Gases, Fifth Edition

**For more indepth information for each component, refer to the pure product MSDS.**

**The information contained in this MSDS is generated from technical sources using the Chemmate Mixture MSDS system and the pure-product MSDS for each component. These mixtures are not tested as a whole for chemical, physical, or health effects.**

### PREPARATION INFORMATION:

<b>DATE:</b>	<b>October 15, 2013</b>
<b>DEPARTMENT:</b>	<b>Safety and Environmental Services</b>
<b>TELEPHONE:</b>	<b>905-803-1600</b>

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

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

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Praxair Canada Inc.  
1 City Centre Drive  
Suite 1200  
Mississauga, ON L5B 1M2