

PRODUCT NAME: NITROUS OXIDE**1. Chemical Product and Company Identification**

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PRODUCT NAME: NITROUS OXIDE
CHEMICAL NAME: Nitrous Oxide
COMMON NAMES/SYNONYMS: Dinitrogen Monoxide, Laughing Gas

2. Composition, Information on Ingredients

Ingredient	% Volume	TLV-ACGIH ²
Nitrous Oxide FORMULA: N ₂ O	≥99 %	50 ppm TWA

3. Hazards Identification

EMERGENCY OVERVIEW
Anesthetic effects at high concentrations. Asphyxia by exclusion of oxygen. Reproductive Hazard. Nonflammable. Oxidizer. May accelerate combustion of other materials.

ROUTE OF ENTRY:

Skin Contact Yes	Skin Absorption No	Eye Contact Yes	Inhalation Yes	Ingestion No
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HEALTH EFFECTS:

Exposure Limits: Yes
Irritant: No
Sensitization: No
Teratogen: Yes
Reproductive Hazard: Yes
Mutagen: Yes
Synergistic Effects: Other agents that depress the central nervous system

EYE EFFECTS:

Adverse effects not anticipated.

SKIN EFFECTS:

Adverse effects not anticipated.

INGESTION EFFECTS:

None known. Ingestion is unlikely.

PRODUCT NAME: NITROUS OXIDE**INHALATION EFFECTS:**

High concentrations may cause deep breathing, dizziness, nausea and eventual unconsciousness due to inadequate oxygen supply. Anesthetic effects may occur when mixed with oxygen at a ratio of 80% nitrous oxide to 20% oxygen. Laughter effects seem to occur after incipient asphyxia accompanied by the sudden return of oxygen as in air. Nitrous oxide is a slight narcotic, but lacks substantial toxicity. Asphyxia will occur due to oxygen exclusion. Maintain oxygen levels above 19.5% at sea level.

Chronic effects of overexposure may include reproductive effects.

4. First Aid Measures**EYES:**

Never introduce ointment or oil into the eyes without medical advice! If pain is present, refer the victim to an ophthalmologist for treatment and follow up.

SKIN:

No adverse effects anticipated.

INGESTION:

None required.

INHALATION:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO NITROUS OXIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

5. Fire Fighting Measures

Conditions of Flammability	Flash Point	Method
Not Flammable	None	Not applicable
Auto-ignition Temperature	LEL %	UEL %
None	None	None
Hazardous combustion products	Sensitivity to mechanical shock	Sensitivity to static discharge
None	None	None

FIRE AND EXPLOSION HAZARDS:**EXTINGUISHING MEDIA:**

Use extinguishing media suitable for the combustible materials involved in the fire.

FIRE FIGHTING INSTRUCTIONS:

None required. Use media suitable for surrounding fire.

6. Accidental Release Measures

Equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate Person in **Linde Gas Middle East LLC**.

PRODUCT NAME: NITROUS OXIDE**7. Handling and Storage**

Use only in well-ventilated areas. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Do not heat cylinder by any means to increase the discharge rate of product from the container.

Use a check valve or trap in the discharge line to prevent hazardous back flow into the container.

Protect containers from physical damage. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits.

Do not allow the temperatures where prevent falling or being knocked over. Full and empty cylinders should be segregated. Use "first in-first out" inventory system to prevent full containers being stored for excessive periods of time.

8. Exposure Controls, Personal Protection**EXPOSURE LIMITS¹:**

Ingredient	% Volume	TLV-ACGIH ²
Nitrous Oxide FORMULA: N ₂ O	≥99%	50 ppm TWA

ENGINEERING CONTROLS:

Use local exhaust to prevent accumulation of high concentrations that may reduce the oxygen level in the air to less than 19.5%.

EYE/FACE PROTECTION:

Chemical safety goggles or safety glasses. Do not wear contact lenses.

SKIN PROTECTION:

Use protective gloves; any material suitable to the use situation.

RESPIRATORY PROTECTION:

Self-contained breathing apparatus should be available for emergency use.

OTHER/GENERAL PROTECTION:

Safety shoes, safety Uniform

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
	: 736. Psig	
Vapor density (Air = 1)	: 1.529	
Evaporation point	: Not Available	
Boiling point	: -127.2	
	: -88.47	
Freezing point	: -131.5	
	: -90.81	
PH	: Not Applicable	
Specific gravity at boiling	: 1.227	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Slightly Soluble	
Odor threshold	: Not Available	
Odor and appearance	: Colorless gas, slightly sweet taste and odor. Liquid appears similar to water.	

PRODUCT NAME: NITROUS OXIDE**10. Stability and Reactivity****STABILITY:**

Stable

INCOMPATIBLE MATERIALS

All flammable materials. Nitrous oxide will serve as the oxidant for most flammable materials. Some flammables will have a lower flammable limit in nitrous oxide than in pure oxygen. Powerful reducing agents will react violently.

HAZARDOUS DECOMPOSITION PRODUCTS:

At elevated temperatures. Nitrous oxide decomposes into nitrogen and oxygen, the rate of decomposition decomposes violently.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. Toxicological Information**REPRODUCTIVE:**

Reproductive toxicity has been observed in experimental animals exposed at concentrations in excess of the current TLV. These toxic effects include:

Toxic effects to newborn rats after exposure of pregnant female to 50,000 ppm for 4 hours.

Toxic effects to testes, epididymis, and sperm duct in male rat following exposures of 200,000 ppm for 8 hours.

Effects on embryo and fetus in exposed rats. Teratogenic effects observed in other mammalian species.

Effects on genetic material have been observed in human, mammalian and insect mutation test systems exposed at concentrations of 50,000 ppm or greater.

OTHER:

Blood changes, including changes in erythrocyte and leukocyte count, have been reported in experimental rats and mice exposed at near the current TLV (50 ppm). Changes in body and liver weight have been reported.

12. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to **Linde Gas Middle East LLC** or authorized distributor for proper disposal.

13. Transport Information

Parameter	United States DOT
Proper Shipping Name	Nitrous Oxide, compressed
Hazard Class	2.2
Identification Number	UN 1070
Shipping Label	Non Flammable Gas, Oxidizer

PRODUCT NAME: NITROUS OXIDE**14. Hazard Classes**

Acute Health Hazard

Fire Hazard

Reactivity Hazard

15. Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of transportation regulations.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:

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