

MATERIAL SAFETY DATA SHEET

Head Office:	Refrigeration & Oxygen Co. Ltd. P.O. Box 501 Safat 13006, Kuwait	Email Id:	info@rocq8.com
Dubai Office:	Emirates Industrial Gases Co. LLC. P.O. Box 3763, Dubai, UAE	Web Address:	www.airtecgulf.com
Qatar Office:	Qatar Oxygen Co. W.L.L P.O. Box 22386, Doha, Qatar	Emergency Phone	
Bahrain Office:	Bahrain Medical & Industrial Gas Plant P.O.Box 80738, Kingdom of Bahrain	Kuwait	+965 1844 844
		Dubai	+971 8005414
		Qatar	+974 44114603/4/5
		Bahrain	+973 17400469/473
		Facsimile Phone	
		Kuwait	+965 2484 3020
		Dubai	+971 42664168
		Qatar	+974 44114350
		Bahrain	+973 17400391

1. CHEMICAL PRODUCT

PRODUCT NAME: **NITROUS OXIDE**

SYNONYMS: **Dinitrogen Monoxide, Laughing Gas**

2. COMPOSITION, INFORMATION ON INGREDIENTS

<u>Ingredient</u> <u>Name</u>	<u>Formula</u>	<u>CAS #</u>	<u>Concentration</u>	<u>Exposure Limits (PPM)</u>				<u>Other</u> <u>STEL</u>
				<u>ACGIH</u> <u>TLV</u>	<u>OSHA</u> <u>PEL</u>	<u>MAC</u>		
NITROUS OXIDE	N2O	10024-97-2	99+%	50	NE	NE		NE

Note: NE = NONE ESTABLISHED

S/A = SIMPLE ASPHYXIAN

3. HAZARD IDENTIFICATION

***** EMERGENCY OVERVIEW *****

High pressure oxidizing liquid and gas.

Vigorously accelerates combustion.

Can cause rapid suffocation.

Can cause anesthetic effects.

May cause frostbite.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: **Inhalation**

ACUTE EFFECTS: Material acts as a simple asphyxiant by displacing air necessary for life. Symptoms include rapid respiration, muscular incoordination, fatigue, dizziness, nausea, vomiting, unconsciousness, and death. Inhalation of small amounts of nitrous oxide may produce feelings of euphoria which may disguise sleepiness or loss of coordination associated with lack of oxygen. Pressure drop through valves and piping may cause extreme cold and frostbite on contact. May cause anesthetic effects.

CHRONIC EFFECTS: **None known**

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY (US ONLY):

NTP - No

IARC MONOGRAPHS - No

OSHA REGULATED - No

4. FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.

EYE CONTACT: None

SKIN CONTACT: If frostbite occurs, flush affected areas with lukewarm water.

INGESTION: None

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: None

5. FIRE FIGHTING MEASURES

FLASH POINT: Nonflammable

AUTOIGNITION TEMPERATURE: N/Av

FLAMMABLE LIMITS: Nonflammable

LOWER:

UPPER:

EXTINGUISHING MEDIA: Use what is appropriate for surrounding fire.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray. If possible, stop the product flow.

HAZARDOUS COMBUSTION PRODUCTS: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: Supports combustion of other materials, particularly when heated. Cylinder rupture may occur under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Allow controlled release into a well-ventilated area. Shut off source if possible and remove source of heat.

SPECIALIZED EQUIPMENT: None

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas. Store in well ventilated areas away from combustibles. Keep valve protection cap on cylinders when not in use. Keep nitrous oxide cylinders locked up when not in use. Limit access to the nitrous oxide to those people that work with it regularly.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain concentrations below exposure limits and to avoid asphyxiation.

EYE / FACE PROTECTION: Safety glasses

SKIN PROTECTION: Protective gloves to prevent contact with cold equipment.

RESPIRATORY PROTECTION: In case of leakage, use self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless

ODOR: Slightly sweetish taste and odor.

PHYSICAL PRESSURE: Gas

VAPOR PRESSURE: 51.69 atm

VAPOR DENSITY (AIR=1): @25C: 1.530

BOILING POINT (C): -88.6

SOLUBILITY IN WATER: v/v @0C: 1.3

SPECIFIC GRAVITY (H2O=1): Gas

EVAPORATION RATE: N/Av

ODOR THRESHOLD: N/Av

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas. Storage near a heat source. Combustibles especially oils and greases.

MATERIALS TO AVOID: LiH and hydrazine spontaneously ignite in material. Forms explosive mixes with NH₃, CO, H₂S, PH₃, and silane. Avoid contact with combustible materials or reducing agents. Powdered aluminum amorphous boron and sodium vapor will burn in material.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: Nitrous oxide explosively decomposes at elevated temperatures (above 1200 deg. F, 650 deg. C) into nitrogen and oxygen. Decomposition will occur at lower temperatures in the presence of catalytic surfaces containing silver, copper and nickel oxides.

11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC₅₀): None established

LETHAL DOSE 50 (LD₅₀): N/Ap

TERATOGENICITY: N/Ap

REPRODUCTIVE EFFECTS: N/Ap

MUTAGENICITY: N/Ap

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Non-returnable cylinders must not be refilled. Dispose of non-refillable cylinders in accordance with federal, state, and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. Return cylinders to supplier with any valve outlet plugs or caps secured and valve protection cap in place.

14. TRANSPORT INFORMATION

CONCENTRATION: 99+%

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Nitrous oxide

HAZARD CLASS: 2.2 (nonflammable)

IDENTIFICATION NUMBER: UN1070
REPORTABLE QUANTITIES: N/Ap
LABELING: NONFLAMMABLE GAS, OXIDIZER

ADR / RID (EU Only): Class 2, 2 O

SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

15. REGULATORY INFORMATION

OSHA: Process Safety Management: Materials are not listed in appendix A of 29 CFR 1910.119 as highly hazardous chemicals.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for material is 10,000 lbs.

EU NUMBER: 233-032-0

NUMBER IN ANNEX 1 OF DIR 67/548: Not listed in annex 1.

EU CLASSIFICATION: N/Av

R: 8A, As

S: 9, 17A

16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

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

DISCLAIMER

The information and recommendations in this Material 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. Refrigeration 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.