MATERIAL SAFETY DATA SHEET

Ing 004

Liquid Nitrous Oxide

April 1986

LIQUID CARBONIC
INDUSTRIAL/MEDICAL CORPORATION
135 SOUTH LA SALLE STREET • CHICAGO, ILLINOIS 60603-4282
PHONE (312) 855-2500

Emergency Phone Numbers: (312) 855-2500; CHEMTREC (800) 424-9300

SECTION I--PRODUCT IDENTIFICATION

CHEMICAL NAME: Nitrous Oxide
COMMON NAME AND SYNONYMS: Nitrous Oxide, Laughing Gas, Dinitrogen Monoxide
CHEMICAL FAMILY: Inorganic Oxides FORMULA: N_2O

SECTION II--HAZARDOUS INGREDIENTS

MATERIAL	VOLUME %	CAS NO.	1985-6 ACGIH TLV UNITS
Nitrous Oxide	100	10024-97-2	None established; simple asphyxiant. NIOSH recommends an 8 hour TWA of 25 ppm

SECTION III--PHYSICAL DATA

BOILING POINT (°F.)	-129	SPECIFIC GRAVITY (H_2O=1)	1.27
VAPOR PRESSURE @70°F	745 psig	% VOLATILE BY VOLUME	100
VAPOR DENSITY (AIR=1)	@ 59°F 1.53	EVAPORATION RATE (BUTYL ACETATE=1)	Rapid
SOLUBILITY IN WATER	@ 32°F 1.3 vol/1 vol H_2O		
APPEARANCE AND ODOR	Colorless with slightly sweetish taste and odor		

SECTION IV--FIRE AND EXPLOSION HAZARD DATA

		LEL	UEL
FLASH POINT (METHOD USED)	N/A	FLAMMABLE LIMITS	N/A N/A

EXTINGUISHING MEDIA: Non-flammable--Use extinguishing media appropriate for surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES: Use water spray to cool fire-exposed containers. Stop flow of gas if possible.
UNUSUAL FIRE AND EXPLOSION HAZARDS: N_2O is an oxidizer and can react with hydrocarbons if ignition energy is supplied and will support combustion. In addition, N_2O can decompose violently under high pressure, temperature with an ignition source.

SECTION V--HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: N_2O is a simple asphyxiant as per ACGIH, accordingly should have 18% by volume minimum oxygen in air at work place.
EFFECTS OF OVEREXPOSURE: NIOSH has recommended a workplace 8 hour TWA of 25ppm.

EMERGENCY AND FIRST AID PROCEDURES: If inhaled, remove to fresh air. Obtain prompt medical attention. Give cardiopulmonary resuscitation and administer oxygen as required. Use self-contained breathing equipment. For skin contact or frostbite, flush affected area with luke warm water. For serious cryogenic burn, see a physician immediately.
ROUTE(S) OF ENTRY: INHALATION? Yes SKIN? Yes INGESTION?
CARCINOGENICITY: NTP? No IARC MONOGRAPHS? No OSHA? No

SECTION VI—REACTIVITY DATA

STABILITY: UNSTABLE ( ) STABLE (X)

CONDITIONS TO AVOID: Avoid high pressure, high temperature metal/metal oxide catalyst. As an oxidizer, also avoid combustible materials.
INCOMPATABILITY (MATERIALS TO AVOID): Hydrocarbons, reducing agents, all combustible materials, fuel, oils, etc.
HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen and oxygen.

HAZARDOUS POLYMERIZATION: MAY OCCUR ( ) WON'T OCCUR (X)

CONDITIONS TO AVOID: N/A

SECTION VII—SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Evacuate all personnel from affected area. Use appropriate protective equipment. Provide ventilation. Remove ignition sources. Stop leak if possible. Do not touch liquid nitrous oxide. Notify Liquid Carbonic for further assistance.

WASTE DISPOSAL METHOD: No waste disposal problem. Gas will diffuse into atmosphere.

SECTION VIII—SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Non-toxic. Use self-contained breathing apparatus for high concentration.
VENTILATION: LOCAL EXHAUST (X) N_2O is heavier than air--ventilate low spots and confined area.
MECHANICAL (GENERAL) (X) Ventilate to keep workplace exposure to a minimum and maintain minimum oxygen concentration of 18% in the air.
PROTECTIVE GLOVES: Loose-fitting, insulated EYE PROTECTION: Safety goggles, glasse and face shield.
OTHER PROTECTIVE EQUIPMENT: Safety shoes

SECTION IX—SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Protect containers from physical damage. Use only approved storage vessels. Use only equipment cleaned for oxygen and nitrous oxide service. Avoid contact with hydrocarbons. Follow all the safety rules related to cryogenic fluid.
OTHER PRECAUTIONS: Refer to CGA Bulletins SB-2, SB-6, Pamphlets P-12, G-8.1, and G-8.2.
SB-2..."Oxygen Deficient Atmosphere"
SB-6..."Nitrous Oxide Security and Control"
P-12..."Safe Handling of Cryogenic Liquids"
G-8.1.."Standard for Nitrous Oxide Systems at Customer Sites"
G-8.2.."Commodity Specification for Nitrous Oxide"