Material Safety Data Sheet

Material Name: Nitrous Oxide MSDS ID: Hynote-0024

Section 1 - Product and Company Identification

Synonyms: Dinitrogen Monoxide, Laughing Gas, Factitious Air, Hyponitrous Acid Anhydride
Chemical Name: Nitrous Oxide
Formula: N_2O
TDG (Canada) CLASSIFICATION: 2.2
WHMIS CLASSIFICATION: A, C, D1B, D2A

ShangHai Hynote

906#,Tower A, Tomson Center,
228 ZhangYang Road, PuDong,
ShangHai, PRC.

EMERGENCY Telephone Numbers:

+86-21-58790001 (In South China):
+86-379-65867058 (In North China)
+86-10-110/119/120 (24 Hours)

Product Information: +86-379-65867058
MSDS Information Email: hynote@shtel.net.cn

Section 2 - Composition/information on ingredients

COMPOSITION: 98.0% to 99.9995%
CAS NUMBER: 10024-97-2
RTECS#: QX1350000
Formula: N_2O

PEL-OSHA[1]: None Available
TLV-ACGIH[2]: 50 ppm TWA
LD_{50} or LC_{50} Route/Species: LC_{50} 160 mg/m^3 (rat)

[1] As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993).
[2] As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents.

Section 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	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	No	Yes	Yes	No

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		

Carcinogenicity:
NTP: No IARC: No OSHA: No

EYE EFFECTS:
Adverse effects not anticipated.
SKIN EFFECTS:
Adverse effects not anticipated.
INGESTION EFFECTS:
None known. Ingestion is unlikely.
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..

NFPA HAZARD CODES	HMIS HAZARD CODES	RATINGS SYSTEM
Health: 2	Health: 2	0 = No Hazard
Flammability: 0	Flammability: 0	1 = Slight Hazard
Reactivity: 0	Reactivity: 0	2 = Moderate Hazard
		3 = Serious Hazard
		4 = Severe Hazard

Section 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 opthalmologist 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.

Section 5- Fire-Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL(%): None	UEL(%): None	
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

FIRE AND EXPLOSION HAZARDS:
Nonflammable. May decompose violently at temperatures above 1112oF (600oC).
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.

Section 6- Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest HYNOTE location.

Section 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.

For additional recommendations, consult Compressed Gas Association's Pamphlet P-1.

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 containers are stored to exceed 130oF (54oC). Containers should be stored upright and firmly secured to 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.

Section 8- Exposure Controls/Personal Protection

EXPOSURE LIMITS[1]:

INGREDIENT	%VOLUME	PEL-OSHA[2]	TLV-ACGIH[3]	LD_{50} or LC_{50} Route/Species
Nitrous Oxide Formula: N_2O CAS: 10024-97-2 RTECS#: QX1350000	98.0 to 99.995	Non Available	50 ppm TWA	LC_{50} 160 mg/6H (rat)

[1] Refer to individual state of provincial regulations, as applicable, for limits which may be more stringent than those listed here.

[2] As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

[3] As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

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 shower.

Section 9- Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure at 20 °C	: 736	psig
Vapor density (Air = 1)	: 1.529	
Evaporation point	: Not Available	
Boiling point	: -127.2	°F
	: -88.47	°C
Freezing point	: -131.5	°F
	: -90.81	°C

pH	: Not Applicable
Specific gravity at STP	: 1.227
Oil/water partition coefficient	: Not Available
Solubility (H20)	: Slightly Soluble
Odor threshold	: Not Available
Odor and appearance	: Colorless gas, slightly sweet taste and odor. Liquid appears similar to water.

Section 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 being appreciable at about 1112^{o}F (600^{o}C). Nitrous oxide exposed to fire or other intense heat source may decompose violently.
HAZARDOUS POLYMERIZATION:
Will not occur.

Section 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, 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.
MUTAGENIC:
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 erythrocite 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..

Section 12- Ecological Information

No data given.

Section 13- 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 Hynote or authorized distributor for proper disposal.

Section 14- Transport Information

DOT/IMO SHIPPING NAME: Nitrous Oxide, compressed
HAZARD CLASS: 2.2
IDENTIFICATION NUMBER: UN 1070
PRODUCT RQ: None
SHIPPING LABEL(s): NONFLAMMABLE GAS, OXIDIZER
PLACARD (when required): NONFLAMMABLE GAS, OXIDIZER

Section 15- Regulatory Information

SARA TITLE III NOTIFICATIONS AND INFORMATION
SARA TITLE III - HAZARD CLASSES:
Acute Health Hazard
Fire Hazard
Reactivity Hazard

Section 16- 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/her (written) consent is a violation of transportation regulations.

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