

MATERIAL
SAFETY
DATA SHEET

PRODUCT NAME Nitrous Oxide	CAS# 10024-97-2
TRADE NAME AND SYNONYMS Nitrous Oxide; Dinitrogen Monoxide; Laughing Gas	DOT I.D. NO. UN 1070
CHEMICAL NAME AND SYNONYMS Nitrous Oxide	DOT HAZARD CLASS Division 2.2 (Nonflammable Gas)
ISSUE DATE AND REVISIONS Revised March 2007	FORMULA N ₂ O

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT 50 Molar PPM (ACGIH 1989-1990). OSHA 1989 does not list a TWA for nitrous oxide.
SYMPTOMS OF EXPOSURE Effects of exposure to high concentrations so as to displace the oxygen in the air necessary for life that causes dizziness, deeper breathing due to air hunger, possible nausea and eventual unconsciousness. It is also employed as an anesthetic when mixed with oxygen. These mixtures are generally 80 molar % N ₂ O and 20 molar % O ₂ . Persons in ill health where such illness would be aggravated by exposure to nitrous oxide should not be allowed to work with or handle this product.
TOXICOLOGICAL PROPERTIES Nitrous Oxide is a slight narcotic but lacks substantial toxicity. However, the liberation of a large amount in a confined area could displace the amount of oxygen in air necessary to support life. Nitrous Oxide is not listed in the IARC, NTP or by OSHA as a carcinogen or potential carcinogen. Persons in ill health where such illness would be aggravated by exposure to Nitrous Oxide should not be allowed to work with or handle this product.
RECOMMENDED FIRST AID TREATMENT PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO NITROUS OXIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. <u>Inhalation:</u> 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 assisted respiration and supplemental oxygen. Further treatment should be symptomatic and supportive.

Nitrous oxide will serve as the oxidant for most flammable compounds. Some flammables have a lower flammable limit in nitrous oxide than in pure oxygen.
Powerful reducing agents will react violently with nitrous oxide at room temperatures.

PHYSICAL DATA

BOILING POINT -88.44°C	CRITICAL TEMPERATURE 36.4 °C
MOLAR SPECIFIC HEAT (25°C, 1 bar abs, constant pressure) 38.635J/mole. °K	CRITICAL PRESSURE 72.54 bar abs
SOLUBILITY IN WATER Slightly Soluble	SPECIFIC VOLUME 8.7ft ³ /lb. at 70°F
EVAPORATION RATE N/A	SPECIFIC GRAVITY (AIR=1) 1.53 at 68°F
APPEARANCE AND ODOR Colorless gas with slightly sweet taste and odor.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	AUTO IGNITION TEMPERATURE N/A	FLAMMABLE LIMITS % BY VOLUME LEL N/A UEL N/A
EXTINGUISHING MEDIA Copious quantities of water for fires with nitrous oxide as the oxidizer.		ELECTRICAL CLASSIFICATION Nonhazardous
SPECIAL FIRE FIGHTING PROCEDURES If possible, stop the flow of nitrous oxide which is supporting the fire.		
UNUSUAL FIRE AND EXPLOSION HAZARDS If cylinders are involved in a fire, safely relocate or keep cool with water spray.		

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID
Unstable		N/A
Stable	X	
INCOMPATIBILITY (Materials to avoid) All flammable materials.		
HAZARDOUS DECOMPOSITION PRODUCTS None		
HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID
May Occur		N/A
Will Not Occur	X	

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.	
VENTILATION See Local Exhaust	SPECIAL N/A
MECHANICAL (Gen.) N/A	OTHER N/A
LOCAL EXHAUST To prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 18 molar percent.	
PROTECTIVE GLOVES Any material	EYE PROTECTION Safety goggles or glasses
OTHER PROTECTIVE EQUIPMENT Safety shoes	

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. If leak is in container or container valve, contact HSG for special advice.

WASTE DISPOSAL METHOD

Do not attempt to dispose of 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 your supplier. For emergency disposal assistance, contact HSG for special advice.

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION

DOT Shipping Name: Nitrous Oxide, Compressed
DOT Shipping Label: Nonflammable Gas

DOT Hazard Class: Division 2.2
I.D. No.: UN 1070

SPECIAL HANDLING RECOMMENDATIONS

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<1,500 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

SPECIAL STORAGE RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time.

SPECIAL PACKING RECOMMENDATIONS

Nitrous Oxide is noncorrosive and may be used with any common structural material. But Nitrous Oxide oxidizes some metals at elevated temperatures.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Law. Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

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