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**MSDS: Nitrous Oxide**

## PRODUCT INFORMATION

**PRODUCT:** Nitrous Oxide

**TRADE NAME:** Nitrous Oxide or Nitrous Oxide,  
Compressed

**CHEMICAL NAME:** Nitrous Oxide or Dinitrogen Monoxide

**SYNONYMS:** Laughing Gas

**FORMULA:** N<sub>2</sub>O

**CHEMICAL FAMILY:** Oxide of Nitrogen

**SUPPLIER'S NAME:** MEGS Inc.

**SUPPLIER'S ADDRESS:** 2675 De Miniac  
Ville St-Laurent, Qc, H4S 1E5

**EMERGENCY PHONE NUMBER:** (514) 956-7503

**MOLECULAR WEIGHT:** 44.01

**PRODUCT USE:** Various

**PRODUCT IDENTIFICATION UN 1070  
NUMBER:**

## HAZARDOUS INGREDIENTS

CHEMICAL ID	CONCENTRATION	CAS #	LD(50)	LC(50)
Nitrous Oxide	100%	10024-97-2	None	Inhalation-Rat 1068 mg/m <sup>3</sup> / 4 h

## PHYSICAL DATA

**PHYSICAL STATE:** Liquid and gas under pressure

**APPEARANCE:** Colorless liquid and gas with slightly  
sweet taste and odor

**ODOR:** See above

**ODOR THRESHOLD:** Unknown

**SPECIFIC GRAVITY (H<sub>2</sub>O = 1):** @ Boiling Point: 1.22

**VAPOR PRESSURE:** 4653 kPa @ 15°C

VAPOR DENSITY (air = 1): 1.53  
EVAPORATION RATE: Not applicable  
BOILING POINT: -88.47°C  
FREEZING POINT: -90.81°C  
pH: Not applicable  
GAS DENSITY: 1.861 kg/m<sup>3</sup> @ 15°C, 101.3 kPa  
COEFFICIENT OF WATER/OIL @ 15°C, Bunsen Coefficient = 0.789  
DISTRIBUTION:

### FIRE OR EXPLOSION HAZARD

**CONDITIONS OF FLAMMABILITY:** Nonflammable gas

**MEANS OF EXTINCTION:** For fires with nitrous oxide as the oxidizer - copious quantities of water.

**FLASHPOINT AND METHOD OF DETERMINATION:** Nonflammable gas

**UPPER EXPLOSION LIMIT (% BY VOL):** Nonflammable gas

**LOWER EXPLOSION LIMIT (% BY VOL):** Nonflammable gas

**AUTO-IGNITION TEMPERATURE:** Nonflammable gas

**FLAMMABILITY CLASSIFICATION:** Nonflammable gas

**HAZARDOUS COMBUSTION PRODUCTS:** Nonflammable gas

**EXPLOSION DATA:** Nonflammable gas

**SENSITIVITY TO STATIC DISCHARGE:** None

### REACTIVITY DATA

**CHEMICAL STABILITY:** Stable at low and normal temperatures. Decomposes to O<sub>2</sub> and N<sub>2</sub> at elevated temperatures.

**INCOMPATIBLE MATERIALS:** All flammable materials

**CONDITIONS OF REACTIVITY:** High temperature

**HAZARDOUS DECOMPOSITION PRODUCTS:** None

### TOXICOLOGICAL PROPERTIES

**ROUTES OF ENTRY:**

**SKIN CONTACT:** None

**SKIN ABSORPTION:** None

**EYE:** None

**INHALATION:** Effects of exposure to concentrations sufficient to displace the oxygen in the air necessary for life are: headaches, dizziness, labored breathing and eventual unconsciousness, and death.

It is employed as an anesthetic when mixed with oxygen. These mixtures are generally 80 molar % N<sub>2</sub>O and 20 molar % O<sub>2</sub>. The laughter effects seem to occur after incipient asphyxia is accompanied by the sudden return of adequate oxygen as in the air.

**INGESTION:** None

**ACUTE OVER EXPOSURE EFFECTS:** Nitrous oxide's primary physiological effect is as a central nervous system depressant. Although slightly narcotic it lacks substantial toxicity. Therefore, its major hazard is the exclusion of an adequate supply of oxygen to the lungs. Nitrous oxide abuse can impair an individual's ability to make and implement life-sustaining decisions.

**CHRONIC OVER EXPOSURE EFFECTS:** Possible side effects; however no cause-and-effect relationship has been established. Epidemiological studies also suggest fetotoxic effects and higher incidences of spontaneous abortions in exposed personnel.

**EXPOSURE LIMITS:** TWA = 50 ppm molar; No STEL is established.

**IRRITANCY OF PRODUCT:** None

**SENSITIZATION TO MATERIAL:** None

**CARCINOGENICITY, REPRODUCTIVE EFFECTS:** No carcinogenicity. See Chronic Over Exposure Effects.

**TERATOGENICITY, MUTAGENICITY:** None

**TOXICOLOGICALLY SYNERGISTIC PRODUCTS:** None

## **PREVENTIVE MEASURES**

**PERSONAL PROTECTIVE EQUIPMENT:** Insulated gloves of any material. Safety goggles or glasses. Safety shoes.

**SPECIFIC ENGINEERING CONTROLS:** Nitrous oxide is noncorrosive and may be used with any common structural material. Nitrous oxide oxidizes some metals at elevated temperatures. Refer to the MEGS Gas Encyclopedia for additional information.

**LEAK AND SPILL PROCEDURES:** EVACUATE ALL PERSONNEL FROM AFFECTED AREA.

Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on container or container valve, contact the closest MEGS location.

**WASTE DISPOSAL:** 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 MEGS for proper disposal. For emergency disposal, contact the closest MEGS location.

**HANDLING PROCEDURES AND EQUIPMENT:** USE ONLY IN WELL-VENTILATED AREAS.

Valve protection caps must remain in place unless container is secured with valve outlet piped to usage point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinders to lower pressure 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. Do not tamper with (valve) safety device. Close valve after each use and when empty. Do not use adaptors.

**STORAGE REQUIREMENTS:** Protect cylinders 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 temperature where cylinders are stored to exceed 52°C. Cylinders must 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.

**TDG CLASSIFICATION:** 2.2 (5.1)

**WHMIS CLASSIFICATION:** A, C

**SPECIAL SHIPPING INFORMATION:** 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.

## **FIRST AID MEASURES**

**SPECIFIC FIRST AID PROCEDURES:** PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO NITROUS OXIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED

## BREATHING APPARATUS.

**INHALATION:** 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 resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

**EYE CONTACT:** In the event of liquid or cold gas exposure, flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes.

**SKIN CONTACT:** Frostbite: FLUSH AFFECTED AREAS WITH LUKEWARM WATER. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

## PREPARATION INFORMATION

**PREPARED BY:** Safety Department

**DATE PREPARED:** 09/01/1999

**LAST REVISION DATE:** 04/01/2008

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