

**PURITAN BENNETT
GAS PRODUCTS DIVISION
10800 PFLUMM ROAD
LENEXA, KANSAS 66215
913-469-5400**

**MATERIAL SAFETY DATA SHEET
NY-TROUS +**

SECTION I - IDENTIFICATION

Issue Date: Revised February 24, 1988
Manufacturer's Name: Puritan Bennett Corporation
Address: 10800 Pflumm Road, Lenexa, Kansas 66215
Emergency Phone No.: 913-469-5400
Chemical Name and Synonyms: Nitrous Oxide/Sulfur Dioxide Mixture
Trade Name and Synonyms: Ny-trous +
Chemical Family: Oxides of Nitrogen and Sulfur
Formula: N₂O and SO₂

SECTION II – HAZARDOUS INGREDIENTS

<u>Material</u>	<u>Volume %</u>	<u>CAS No.</u>	<u>OSHA PEL</u>
Nitrous Oxide	99.90	10024-97-2	Simple Asphyxiant
Sulfur Dioxide	0.01	7446-09-5	5 ppm

SECTION III – PHYSICAL DATA

Boiling Point: -127.4°F
Vapor Pressure: 745 psig at 70°F
Vapor Density (Air = 1.0): 1.53
Solubility in Water: 129.7 cc/100 cc H₂O @ 32°F
Percent Volatile by Volume: 100%
Evaporation Rate: Gas
Appearance and Odor: Colorless gas, pungent odor

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A
Flammable Limit: N/A
Extinguishing Media: Non-flammable, will support combustion
Special Fire Fighting Procedures: Keep cylinders cool with water spray
Unusual Fire and Explosion Hazards: Excessive pressure can build up due to heat. Cylinders may explode if pressure relief devices should fail to relieve pressure. Decomposes at elevated temperature.

SECTION V – HEALTH HAZARD DATA

ACGIH Time – Weighted Average Exposure Limit (TWA) Sulfur Dioxide – 2 ppm
ACGIH Short – Term Exposure Limit (STEL): Nitrous Oxide – None specified
Effects of Overexposure: Sulfur Dioxide – 5 ppm
Nitrous Oxide – None specified
Nitrous Oxide can induce hysteria. Anesthetic properties at high concentration. Some epidemiological studies suggest that long term exposure to nitrous oxide may have certain health hazards to operating room and dental personnel. The National Institute for Occupational Health (NIOSH) has recommended a maximum exposure on an 8-hour Time Weighted Average (TWA) of 25 parts per million for anesthetic administration and 50 parts per million in dental offices. Asphyxiation can occur by displacement of air. Can cause dizziness, unconsciousness, or death. Sulfur dioxide, added as an odorizing agent, is a highly irritating gas that readily elicits respiratory reflexes. It is intensely irritating to the eyes, throat, and respiratory tract. Inhalation of 8-12 ppm in air causes throat irritation, coughing, constriction of the chest, and tearing and smarting of the eyes. Normally 3-5 ppm can be detected because of its odor.
Emergency and First Aid Procedures: Remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, administer artificial respiration. For cryogenic burns or frost bite, flush affected area with warm (not hot) water. Obtain prompt medical attention.
Carcinogenicity: Not listed in NTP or IARC; not regulated as a carcinogen by OSHA.

SECTION VI – REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Excess Heat. Decomposes at elevated temperature to nitrogen and oxygen.
Materials to Avoid: Combustibles
Hazardous Decomposition Products: Decomposes to nitrogen and oxygen at elevated temperature.
Hazardous Polymerization: Will Not Occur

SECTION VII – SPILL OR LEAK PROCEDURE

Steps to be taken in case material is released or spilled: Provides adequate ventilation to maintain oxygen concentration above 19.5% by volume. Liquid spills can cause cryogenic burns. Emergency personnel will require self-contained breathing apparatus.
Waste Disposal Method: Slowly vent to atmosphere in an open area.

SECTION VIII – SPECIAL PROTECTION INFORMATION

Eye Protection: Safety glasses or goggles
Protective Gloves: Cotton, leather, or neoprene
Local Exhaust: Recommended
Ventilation: See Section VII
Respiratory Protection: See Section VII
Other Protective Equipment: Safety shoes when handling cylinders. Use face shield, insulated gloves, rubber shoes, and apron when handling liquid Ny-trous +.

SECTION IX – SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Cylinders should not be dropped. Keep properly secured or protected to prevent cylinders from being knocked over. Material can be stored outside. Temperature should be kept below 125°F.
Other Precautions: Cylinders should be stored upright with valve cap in place.
Additional Information: Please refer to CGA Bulletin SB-2 "Oxygen Deficient Atmospheres", and CGA Pamphlets P-1 "Safe Handling of Compressed Gases in Containers", and P-14 "Accident Prevention in Oxygen-Rich and Oxygen-Deficient Atmospheres".

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