



Material Safety Data Sheets

MSDS No: M-23122**Date: 03/09/2001**

SUPPLIER ADDRESS: 6141 Easton Road, Bldg. 1
PO Box 310
Plumsteadville, PA 18949-0310

EMERGENCY PHONE NUMBER: (215) 766-8861

1. CHEMICAL PRODUCT

PRODUCT NAME: **NITROGEN DIOXIDE IN NITROGEN** SYNONYMS: **None**

2. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient Name	Formula	CAS #	Concentration	ACGIH TLV	Exposure Limits (PPM)		
					OSHA PEL	MAC	Other STEL
NITROGEN DIOXIDE	NO2	10102-44-0	4-4599 PPM	3	5	2	5
NITROGEN	N2	7727-37-9	BALANCE	S/A	S/A	S/A	S/A

Note: NE = NONE ESTABLISHED

S/A = SIMPLE ASPHYXIANT

3. HAZARD IDENTIFICATION

* * * EMERGENCY OVERVIEW * * *

High pressure gas.
May be fatal if inhaled.
Can cause severe lung damage.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: **Inhalation**

ACUTE EFFECTS: Inhalation will cause constriction of the throat and bronchi and edema of the lungs. Arterial dilation, fallen blood pressure, headache, dizziness, and possible formation of methemoglobin, irritation of nose and throat, coughing, burning in throat and chest. Gas may cause irritation to the eye and mucous membrane. Mixture can act as a simple asphyxiant by displacing air necessary for life.

CHRONIC EFFECTS: Nitrogen dioxide at 5-50 ppm can cause a slowly evolving pulmonary edema with respiratory tract irritation, cough, headache, weakness, and corrosion of teeth.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: **None**

OTHER EFFECTS OF OVEREXPOSURE: **None**

CARCINOGENICITY (US ONLY):

NTP - No
IARC MONOGRAPHS - No
OSHA REGULATED - No

4. FIRST AID MEASURES

INHALATION: Give victim 100% oxygen if breathing has not stopped; give 100% oxygen with artificial respiration if breathing has stopped. Do not move victim until permitted to do so by physician.

EYE CONTACT: Immediately flush with copious amounts of water for at least 15 minutes.

SKIN CONTACT: Immediately flush with copious amounts of water for at least 15 minutes while removing contaminated clothing.

INGESTION: None

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: None

5. FIRE FIGHTING MEASURES

FLASH POINT: Nonflammable

AUTOIGNITION TEMPERATURE: N/Ap

FLAMMABLE LIMITS: Nonflammable

LOWER:
UPPER:

EXTINGUISHING MEDIA: Use what is appropriate for surrounding fire.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray.

HAZARDOUS COMBUSTION PRODUCTS: Nitrogen dioxide when heated or reacted with water may release toxic fumes.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Cylinder rupture may occur under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area. Red-brown color will identify large leaks.

SPECIALIZED EQUIPMENT: None

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Use suitable hand truck to move cylinders. Use only in a well-ventilated area.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas. Keep valve protection cap on cylinders when not in use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain concentrations below exposure limits and to avoid asphyxiation.

EYE / FACE PROTECTION: Goggles.

SKIN PROTECTION: Protective gloves.

RESPIRATORY PROTECTION: Use a self-contained breathing apparatus in case of emergency or non-routine use.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless

ODOR: Pungent

PHYSICAL PRESSURE: Gas

VAPOR PRESSURE: N/Ap

VAPOR DENSITY (AIR=1): 0.968 - 0.976

BOILING POINT (C): N/Ap

SOLUBILITY IN WATER: NO₂ decomposes in water to form nitric acid and nitrous acid.

SPECIFIC GRAVITY (H₂O=1): N/Ap

EVAPORATION RATE: Gas

ODOR THRESHOLD: N/Av

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas. Storage near a heat source.

MATERIALS TO AVOID: Reacts with hydrocarbons, organic dust, cyclohexane, fluorine, formaldehyde, alcohol's, nitrobenzene, petroleum, and toluene. Nitrogen reacts with Li, Nd, and Ti at high temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: When heated to decomposition or reacted with water, may emit toxic fumes.

11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC50): 115 ppm, Rat 1 hour (NO₂)

LETHAL DOSE 50 (LD50): N/Ap

TERATOGENICITY: N/Ap

REPRODUCTIVE EFFECTS: N/Ap

MUTAGENICITY: N/Ap

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place.

14. TRANSPORT INFORMATION

CONCENTRATION: 4-4599 ppm

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Compressed gases, n.o.s.

HAZARD CLASS: 2.2 (nonflammable)

IDENTIFICATION NUMBER: UN1956

REPORTABLE QUANTITIES: 10

LABELING: NONFLAMMABLE GAS

ADR / RID (EU Only): Class 2, 1A

SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

15. REGULATORY INFORMATION

OSHA: Process Safety Management: Minor component is listed in appendix A 29 CFR 1910.119 as a highly hazardous chemical. (Nitrogen Dioxide)

TSCA: Mixture is not listed in TSCA inventory.

SARA: The threshold planning quantity for this mixture is 10,000 lbs.

EU NUMBER: N/Ap

NUMBER IN ANNEX 1 OF DIR 67/548: Mixture is not listed in annex 1.

EU CLASSIFICATION: N/Ap

R: 20, 37

S: 9

16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS: N/Ap - Not Applicable N/Av - Not Available SA - Simple Asphyxiant NE - None Established

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