

INTERNATIONAL_GASES_AND_CHEMICALS_LTD

MATERIAL SAFETY DATA SHEETS

DATE: 1/26/01

SUPPLIER ADDRESS: SPEEDWELL RD
PARKHOUSE EAST
NEWCASTLE-U-LYME

EMERGENCY PHONE: (178) 256-5556
NUMBER

_1._CHEMICAL_PRODUCT

PRODUCT NAME: NITROGEN DIOXIDE

SYNONYMS: Dinitrogen tetroxide, nitrogen peroxide

_2._COMPOSITION,_INFORMATION_ON_INGREDIENTS

Ingredient Name	Formula	CAS#	Concentration	Exposure Limits (PPM)			
				ACGIH TLV	OSHA PEL	MAC	Other STEL
NITROGEN DIOXIDE (c) = ceiling	NO2	10102-44-0	99+%	3	5(c)	2	5

_3._HAZARD_IDENTIFICATION

*** EMERGENCY OVERVIEW ***

Poisonous liquid and gas under pressure.
May be fatal if inhaled.
Can cause severe lung damage.
Can cause eye and skin burns.
Symptoms of exposure may be delayed.
Vigorously accelerates combustion.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation , Eye , Skin

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. Nitrogen dioxide is a corrosive liquid and may severely burn body tissue. Nitrogen dioxide may produce malaise, dyspnea and nausea.

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 known

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY (US Only):

NTP - No
IARC MONOGRAPHS - No
OSHA REGULATED - No

Continued ...

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: Effects may be delayed for 48-72 hours, keep under observation.

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. Nitrogen dioxide is a strong oxidizing agent which may cause fire on contact with flammables or combustibles.

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. Oxidizer that accelerates the combustion of other materials.

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. Cover liquid spills with excess NaHCO₃; mix; spray with H₂O atomizer; flush to holding tank for disposal.

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 concentration below exposure limits.

PERSONAL PROTECTION

EYE/FACE PROTECTION: Goggles.

SKIN PROTECTION: Impervious gloves, coveralls, boots, and/or other resistant protective clothing.

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 to pale yellow

ODOR: Irritating pungent odor.

PHYSICAL STATE: Liquid

VAPOR PRESSURE: @20 deg C: 720 mm Hg

VAPOR DENSITY (AIR=1): 1.58

BOILING POINT (C): 21

SOLUBILITY IN WATER: Decomposes to form nitric acid and nitric oxide.

Continued ...

SPECIFIC GRAVITY (H2O=1): @20 deg.C:
1.45

EVAPORATION RATE: N/Ap

ODOR THRESHOLD: 0.058-0.4ppm

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Avoid contact with incompatible chemicals.

MATERIALS TO AVOID: Reacts with hydrocarbons, organic dust, cyclohexane, fluorine, formaldehyde, alcohol's, nitrobenzene, petroleum, and toluene. Also reacts with incompletely halogenated hydrocarbons.

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.

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: 99+%

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Dinitrogen tetroxide

HAZARD CLASS: 2.3 (poison), Hazard Zo A

IDENTIFICATION NUMBER: UN1067

REPORTABLE QUANTITIES: 10

LABELING: POISON GAS, OXIDIZER, CORROSIVE

ADR/RID (EU Only): Class 2, 2TOC

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

15. REGULATORY INFORMATION

OSHA: Process Safety Management: Material is listed in appendix A of 29 CFR 1910.119 as highly hazardous chemical.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for this material is 100 lbs.

EU NUMBER: 233-272-6

NUMBER IN ANNEX 1 OF DIR 67/548: Material is listed in annex 1.

EU CLASSIFICATION: N/Av

R: 26-37

S: 7/9-26-45

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

Continued ...

SA - Simple Asphyxiant
NE - None Established

DISCLAIMER: Information included in this document is given to the best of our knowledge, however, no warranty is made that the information is accurate or complete. We do not accept any responsibility for damages by the use of the document.