



# Material Safety Data Sheet

## 1. Product and Company Identification

Product name : **Nitrogen Dioxide, Liquid**

Chemical formula : NO<sub>2</sub>

Synonyms : Nitrogen Dioxide Liquid; Nitrogen Oxide (NO<sub>2</sub>); Nitrite Radical; Nitrito; Nitro; Nitrogen Dioxide; Nitrogen Dioxide (NO<sub>2</sub>); Dinitrogen Tetraoxide; Nitrogen peroxide; NO<sub>2</sub>; UN 1067

Company : Med Tech Gases, Inc.  
20 Hall Street  
Medford, MA 02155

Telephone : 800-FINE-GAS

Emergency : 800-424-9300

## 2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Nitrogen Dioxide, Liquid	10102-44-0	100%

## 3. Hazards Identification

### Emergency Overview

Potentially fatal if inhaled, respiratory tract burns, skin burns, eye burns, mucous membrane burns. Containers may rupture or explode if exposed to heat. May ignite combustibles.

### Potential Health Effects

Inhalation : Burns, cough, fatigue, nausea, stomach pain, difficulty breathing, irregular heartbeat, headache, dizziness, bluish skin color, lung congestion, lung damage, unconsciousness, death. May cause tooth decay, burns, cough, headache, dizziness, skin disorders, difficulty breathing, digestive disorders, lung damage in long term exposure.

Eye contact : Burns, frostbite, blurred vision, eye damage. May cause burns, blurred vision, eye damage in long term exposure.

Skin contact : Burns, frostbite. May cause burns in long term exposure.

Ingestion : Burns, frostbite, nausea, vomiting, stomach pain. May cause burns in long term exposure.

Chronic Health Hazard : None known.

## 4. First Aid Measures

General advice : None.

Eye contact : Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Skin contact : If frostbite occurs, immediately flush with plenty of lukewarm water (105-115°F; 41-46°C). DO NOT USE HOT WATER. If warm water is not available, gently

- wrap affected parts in blankets. Get immediate medical attention.
- Ingestion : If swallowed, drink plenty of water. Do NOT induce vomiting. Get immediate medical attention.
- Inhalation : If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.
- Notes to physicians : For inhalation, consider oxygen.  
Avoid gastric lavage or emesis.

## 5. Fire-Fighting Measures

- Suitable extinguishing media : Water.  
Large fires: Flood with fine water spray. Do not use dry chemicals, carbon dioxide or halogenated extinguishing agents.
- Specific hazards : Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials. Containers may rupture or explode if exposed to heat.
- Fire fighting : Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. For small fires, contain and let burn. Use extinguishing agents appropriate for surrounding fire. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Evacuation radius: 800 meters (1/2 mile).

## 6. Accidental Release Measures

- Air release : Reduce vapors with water spray. Collect runoff for disposal as potential hazardous waste.
- Soil release : Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers. Dike for later disposal. Absorb with sand or other non-combustible materials. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).
- Water release : Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Collect spilled material using mechanical equipment.
- Occupational spill/release : Stop leak if possible without personal risk. Avoid contact with combustible materials. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
- Additional advice : None.

## 7. Handling and Storage

### Handling

Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

### Storage

Store in accordance with all current regulations and standards. NFPA 430 Code for the Storage of Liquid and Solid Oxidizing Materials. Store in a cool, dry place. Store in a well-ventilated area. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to TPQ (U.S. SARA Section 302). SARA Section 303 requires

facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355 Part B). Keep separated from incompatible substances.

## 8. Exposure Controls / Personal Protection

### Exposure limits

ACGIH	:	3 ppm TWA 5 ppm STEL
OSHA (final)	:	5 ppm Ceiling; 9 mg/m <sup>3</sup> Ceiling
OSHA (vacated)	:	1 ppm STEL; 1.8 mg/m <sup>3</sup> STEL
NIOSH	:	1 ppm STEL; 1.8 mg/m <sup>3</sup> STEL

### IDLH

20 ppm

### Engineering measures/Ventilation

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

### Personal protective equipment

Respiratory protection	:	The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA. 20 ppm – Any supplied-air respirator operated in a continuous-flow mode. Any self-contained breathing apparatus with a full facepiece. Any supplied-air respirator with a full facepiece. Emergency or planned entry into unknown concentrations or IDLH conditions – Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Escape – Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern. Only non-oxidizable sorbents are allowed (not charcoal). Any appropriate escape-type, self-contained breathing apparatus.
Hand protection	:	Wear insulated gloves.
Eye protection	:	For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.
Skin and body protection	:	For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

## 9. Physical and Chemical Properties

Form	:	Liquid.
Color	:	Yellow or brown color.
Odor	:	Pungent, irritating odor.
Molecular weight	:	46.01
Vapor pressure	:	720 mmHg @ 20°C
Vapor density	:	1.58 (air = 1)
Boiling point	:	21°C
Melting point	:	-11°C

Water solubility : Decomposes.  
Specific gravity : 1.449 (water = 1)  
Solvent solubility : Soluble: Concentrated sulfuric acid, nitric acid, carbon disulfide, chloroform, alkali.

## 10. Stability and Reactivity

Stability : Stable under normal conditions.  
Conditions to avoid : Avoid contact with combustible materials. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers.  
Materials to avoid : Combustible materials, metals, bases, metal bases, reducing agents, metal carbide, halo carbons, halogens, oxidizing materials, metal salts, amines, acids, fluorine, ammonia.  
Hazardous decomposition products : Thermal decomposition products: oxides of nitrogen.

## 11. Toxicological Information

The components of this material have been reviewed in various sources and the following endpoints are published:

NITROGEN : Inhalation LC50 Rat: 88 ppm/4H; Inhalation LC50 Rat: 165 mg/m<sup>3</sup>/4H;  
DIOXIDE, LIQUID : Inhalation LC50 Rat: 220 mg/m<sup>3</sup>/1H  
(10102-44-0)

### Acute Toxicity Level

NITROGEN : Highly toxic: inhalation.  
DIOXIDE, LIQUID  
(10102-44-0)

### Component Carcinogenicity

ACGIH : A4 – Not Classifiable As A Human Carcinogen  
DFG : Category 3B (could be carcinogenic for man)

### Local Effects

NITROGEN : Corrosive: inhalation, skin, eye.  
DIOXIDE, LIQUID  
(10102-44-0)

## 12. Ecological Information

No LOLI ecotoxicity data are available for this product's components.

## 13. Disposal Considerations

Waste from residues : Dispose in accordance with all applicable regulations. Subject to disposal  
/ unused products regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): P078.  
Contaminated : Return cylinder to supplier.  
packaging  
Component Waste : RCRA: waste\_number P078  
Numbers

## 14. Transport Information

DOT (US only)

Proper shipping name : Dinitrogen tetroxide  
Class : 2.3  
UN/ID No. : UN1067  
Labeling : Poison Gas, Oxidizer, Corrosive  
Additional Info : Toxic-Inhalation Hazard Zone A

**15. Regulatory Information**

U.S. Federal Regulations

This material contains one or more of the following chemicals required under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

NITROGEN DIOXIDE, LIQUID (10102-44-0) : SARA 302: 100 lb TPQ  
10 lb final RQ (releases to the air in amounts less than 1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6); 4.54 kg final RQ (releases to the air in amounts less than 1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6).  
CERCLA: 10 lb final RQ (releases to the air in amounts less than 1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6); 4.54 kg final RQ (releases to the air in amounts less than 1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6).  
OSHA (safety): 250 lb TQ

SARA 311/312

Acute: Yes  
Chronic: No  
Fire: Yes  
Reactive: No  
Pressure: Yes

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
NITROGEN DIOXIDE, LIQUID	10102-44-0	Yes	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65