



Material Safety Data Sheet

1. Product and Company Identification

Product name : **Nitric Oxide**

Chemical formula : N-O

Synonyms : Nitrogen Oxide (NO); Nitric Oxide (NO); Nitric Oxide Trimer; Nitrogen Monoxide; Nitrogen Monoxide; Nitrogen Oxide (N404); Nitrosyl Radical; UN 1660

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
Nitric Oxide	10102-43-9	100%

3. Hazards Identification

Emergency Overview

Harmful if inhaled, respiratory tract irritation, skin irritation, blood damage.
Containers may rupture or explode if exposed to heat. May ignite combustibles.
May react on contact with water. Releases toxic, corrosive, flammable or explosive gases.

Potential Health Effects

Inhalation : Irritation, nausea, vomiting, stomach pain, chest pain, difficulty breathing, headache, dizziness, bluish skin color, lung congestion.

Eye contact : Irritation (possibly severe).

Skin contact : Irritation (possibly severe).

Ingestion : No information is available.

Chronic Health Hazard : None known.

4. First Aid Measures

General advice : None.

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

Skin contact : Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Ingestion : If a large amount is swallowed, 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.

Antidote : Methylene blue, intravenous; Ascorbic acid, intravenous.

5. Fire-Fighting Measures

Suitable extinguishing media : Water.
Do not use dry chemicals, carbon dioxide or halogenated extinguishing agents. Large fires: Flood with fine water spray.

Specific hazards : Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials.

Fire fighting : Move container from fire area if it can be done without risk. Cool containers with water spray until well after fire is out. Stay away from 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.

6. Accidental Release Measures

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

Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

Storage

Store in accordance with all current regulations and standards. NFPA 430 code for the Storage of Liquid and Solid Oxidizing materials. Keep separated from incompatible substances. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA 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).

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH : 25 ppm TWA
OSHA (final) : 25 ppm TWA ; 30 mg/m³ TWA
OSHA (vacated) : 25 ppm TWA ; 30 mg/m³ TWA
NIOSH : 25 ppm TWA ; 30 mg/m³ TWA

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.
100 ppm – Any supplied-air respirator operated in continuous-flow mode. Any chemical cartridge respirator with a full facepiece and cartridge(s) providing

protection against this substance. Only non-oxidizable sorbents are allowed (not charcoal). Any powered, air-purifying respirator with cartridge(s) providing protection against this substance. Only non-oxidizable sorbents are allowed (not charcoal). Any air-purifying respirator with a full facepiece and a canister providing protection against this substance. Only non-oxidizable sorbents are allowed (not charcoal). Any supplied-air respirator. Any self-contained breathing apparatus with a full facepiece.

Escape – Any air-purifying respirator with a full facepiece and a canister providing protection against this substance. Only non-oxidizable sorbents are allowed (not charcoal). Any appropriate, escape-type, self-contained breathing apparatus.

For unknown concentrations or immediately dangerous to life or health – Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

- Hand protection : Wear appropriate chemical resistant gloves.
- Eye protection : Wear splash resistant safety goggles. Provide and emergency eye wash fountain and quick drench shower in the immediate work area.
- Skin and body protection : Wear appropriate chemical resistant clothing.

9. Physical and Chemical Properties

- Form : Gas.
- Color : Colorless.
- Odor : Not available.
- Molecular weight : 30.01
- Vapor pressure : 26000 mmHg @ 20°C
- Vapor density : 1.036 (air = 1)
- Specific gravity : Not applicable.
- Boiling point : -242°F (-152°C)
- Melting point : -263°F (-164°C)
- Water solubility : 7.3% @ 0°C
- Evaporation rate : Not applicable.
- Solvent solubility : Soluble: sulfuric acid, alcohol, ferrous sulfate solutions, carbon disulfide

10. Stability and Reactivity

- Stability : May react on contact with air. May react on contact with water. Releases toxic, corrosive, flammable or explosive gases. May explode during distillation or evaporation.
- 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 : Metals, bases, metal oxides, reducing agents, combustible materials, halo carbons, oxidizing materials, halogens, metal carbide, metal salts.
- 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 selected endpoints are published:

NITRIC OXIDE : Inhalation LC50 Rat: 1068 mg/m³/4H
(10102-43-9)

Acute Toxicity Level

NITRIC OXIDE : Highly toxic: inhalation
(10102-43-9)

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

Local Effects

NITRIC OXIDE : Irritant: inhalation, skin.
(10102-43-9)

Target Organs

NITRIC OXIDE : Blood
(10102-43-9)

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): D001, D003.
Contaminated : Return cylinder to supplier.
packaging

14. Transport Information

DOT (US only)

Proper shipping : Nitric Oxide, Compressed
name
Class : 2.3
UN/ID No. : UN1660
Labeling : Poison, Oxidizers, Corrosive
Additional shipping : Toxic-Inhalation Hazard Zone A
description

Further information

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

15. Regulatory Information

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified 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.

NITRIC OXIDE (10102-43-9)

SARA 302 : 100 lb TQP
10 lb final RQ (releases to 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 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 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 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: No
- 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
NITRIC OXIDE	10102-43-9	Yes	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65