



Material Safety Data Sheet

1. Product and Company Identification

Product name : **Nitrogen Trifluoride**

Chemical formula : NF₃

Synonyms : Nitrogen fluoride (NF₃); Trifluoroamine; Trifluoroammonia; Perfluoroammonia; Trifluorammine; Trifluorammonia; UN 2451

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 Trifluoride	7783-54-2	100%

3. Hazards Identification

Emergency Overview

May cause blood damage.

Containers may rupture or explode if exposed to heat. Strong oxidizer. Contact with combustible material may cause flash fire.

Potential Health Effects

Inhalation : Harmful if inhaled, irritation, nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, bluish skin color, lung congestion, blood disorders, convulsions, coma. May cause blood disorders, kidney damage, liver damage in long term exposure.

Eye contact : No information on significant adverse effects.

Skin contact : No information on significant adverse effects.

Ingestion : Ingestion of a gas is unlikely.

Chronic Health Hazard : None known.

4. First Aid Measures

Eye contact : 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 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.
Note to physicians : For inhalation, consider oxygen.
Antidote : Methylene blue, intravenous; ascorbic acid, intravenous.

5. Fire-Fighting Measures

Suitable extinguishing media : Water.
Large fires: Flood with fine water spray. Apply water from a protected location or from a safe distance.
Specific hazards : 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 the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after the fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Flood with water. 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. Evacuate if fire gets out of control or containers are directly exposed to fire. Evacuation radius: 800 meters (1/2 mile).
Protective Equipment and Precautions for Firefighters : Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

6. Accidental Release Measures

Occupational spill/release : Avoid contact with combustible materials. Do not touch spilled material. Small dry spills: Move containers away from spill to a safe area. Small liquid spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry.
Additional advice : None.

7. Handling and Storage

Handling

Do not breathe gas fumes, vapors or spray. Wash thoroughly after handling. When using, do not drink, eat or smoke. Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

Storage

Store in accordance with all current regulations and standards. Store in a well-ventilated area. Protect from sunlight. Keep container tightly closed. Store in a secure area. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH : 10 ppm TWA
OSHA (final) : 10 ppm TWA; 29 mg/m³ TWA
OSHA (vacated) : 10 ppm TWA; 29 mg/m³ TWA
NIOSH : 10 ppm TWA; 29 mg/m³ TWA

IDLH

1000 ppm 250 mg/m³

Engineering measures/Ventilation

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present.

Personal protective equipment

Respiratory protection	:	The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA. 100 ppm – Any air-purifying half-mask respirator equipped with cartridge(s) providing protection against the compound of concern. Any supplied-air respirator. 250 ppm – Any supplied-air respirator operated in a continuous-flow mode. Any powered, air-purifying respirator with cartridge(s) providing protection against this substance. 500 ppm – Any air-purifying respirator with a full facepiece and a canister providing protection against the compound of concern. 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. Any powered, air-purifying respirator with a tight-fitting facepiece and cartridge(s) providing protection against this substance. Any supplied-air respirator with a tight-fitting facepiece that is operated in a continuous-flow mode. Any self-contained breathing apparatus with a full facepiece. Any supplied-air respirator with a full facepiece. 1000 ppm – Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode. 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. Any appropriate escape-type, self-contained breathing apparatus.
Hand protection	:	Wear chemical resistant, insulated gloves.
Eye protection	:	Wear chemical safety goggles. A faceshield is 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	:	Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing.

9. Physical and Chemical Properties

Form	:	Gas.
Color	:	Colorless.
Odor	:	Damp, moldy odor.
Molecular weight	:	71.00
Vapor density	:	2.46 (air = 1)
Vapor pressure	:	1500 mmHg @ -119°C
Boiling point	:	-129 - -120°C
Melting point	:	-217 - -207°C

Water solubility : Slightly soluble.

10. Stability and Reactivity

Stability : Stable under normal conditions.
Conditions to avoid : Avoid contact with combustible materials. May ignite or explode on contact with combustible materials. Keep out of water supplies and sewers.
Materials to avoid : Combustible materials, metals, bases, reducing agents.
Hazardous decomposition products : Thermal decomposition products: halogenated compounds.

11. Toxicological Information

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

NITROGEN : Inhalation LC50 Rat: 6700 ppm/1H
TRIFLUORIDE
(7783-54-2)

Acute Toxicity Level

NITROGEN : Toxic: inhalation.
TRIFLUORIDE
(7783-54-2)

Component Carcinogenicity

ACGIH : A4 – Not Classifiable As A Human Carcinogen

Target Organs

NITROGEN : Blood.
TRIFLUORIDE
(7783-54-2)

Medical Conditions Aggravated by Exposure

Blood system disorders, liver disorders, kidney disorders.

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.
Contaminated : Return cylinder to supplier.
packaging

14. Transport Information

DOT (US only)

Proper shipping name : Nitrogen trifluoride
Class : 2.2
UN/ID No. : UN2451
Labeling : Non-Flammable Gas, Oxidizer

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 : OSHA (safety): 5000 lb TQ
TRIFLUORIDE
(7783-54-2)

SARA 311/312

Acute: Yes
Chronic: Yes
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 TRIFLUORIDE	7783-54-2	Yes	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65