Advanced Specialty Gases
An Iwatani Company

Safety Data Sheet
Nitrogen Trifluoride

www.advancedspecialtygases.com

Section 1: Product and Company Identification

Advanced Specialty Gases
135 Catron Dr. Reno, NV 89512
775-356-5500

IN CASE OF EMERGENCY CALL CHEMTREC: 1-800-424-9300

Product Code: Nitrogen Trifluoride

Section 2: Hazards Identification

Danger

Hazard Classification:
Acute Gas Inhale Toxicity (Category 4)
Gases Under Pressure
Oxidizing Gas (Category 1)
Specific target organ toxicity (Repeated Exposure) (Category 2)
Specific target organ toxicity (Single Exposure) (Category 2)

Hazard Statements:
Contains gas under pressure; may explode if heated
Harmful if inhaled
May cause damage to organs
May cause damage to organs through prolonged or repeated exposure
May cause or intensify fire; oxidizer

Precautionary Statements
Prevention:
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
[In case of inadequate ventilation] wear respiratory protection.
Keep and store away from clothing and combustible materials.
Do not breathe dust/fume/gas/mist/ vapors/spray..
Keep reduction valves/valves and fittings free from oil and grease.
Use only outdoors or in a well-ventilated area.

Response:
If exposed or concerned: Get medical advice/attention.
In case of fire: Stop leak if safe to do so.
Call a poison center or doctor if you feel unwell.
If inhaled: Remove person to fresh air and keep comfortable for breathing.

Storage:
Protect from sunlight.
Store in well-ventilated place.
Store locked up.

Disposal:
Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

CAS #
7783-54-2

Chemical Substance	Chemical Family	Trade Names
Nitrogen Trifluoride	Inorganic gases	Nitrogen fluoride, trifluoroamine, trifluoroammonia, Perfluoroammonia; NF3; UN 2451; N,N,N-Trifluoroamine

Section 4: First Aid Measures

Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Flush skin with plenty of water for 15 minutes. Remove contaminated clothing and shoes, wash before reuse. Get medical attention immediately.	Flush eyes with plenty of water for 15 minutes. Get medical attention immediately.	Not likely route of exposure.	Remove victim to fresh air. Provide artificial respiration if breathing is difficult. Consider oxygen. Contact medical personnel immediately.	Consider oxygen.

Section 5: Fire Fighting Measures

Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Non-flammable. Use extinguishing media suitable for surrounding fire.	Non-flammable	▪ Wear self-contained breathing apparatus.

Section 6: Accidental Release Measures

Personal Precautions	Environmental Precautions	Methods for Containment
Isolate area. Contact emergency personnel. Eliminate ignition sources if it is safe to do so.	Avoid contact with soil, waterways, drains and sewers.	Shut off flow if possible without risk.

Methods for Cleanup	Other Information
Discard any spilled material in a closed container in compliance with all regulations.	

Section 7: Handling and Storage

Handling	Storage

Handling	Storage
Store in well-ventilated area. Keep away from combustibles and ignition sources. Secure cylinders in upright position. Store in a cool area.	Do not breathe gas. Use in well-ventilated area. Avoid contact with eyes, skin and clothing. Protect cylinders from damage. Open valve slowly.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines
OSHA PEL = 10 ppm ACGIH TLV-TWA (2008) = 10 ppm

Engineering Controls

No specific controls are needed.

Eye Protection	Skin Protection	Respiratory Protection
Wear vapor-proof goggles.	Wear protective clothing.	Wear self-contained breathing apparatus.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Gas	Colorless	Colorless	N/A	Gas	Moldy odor	N/A

Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Not available	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
-200.31F (-129.06C)	-340.22F (-206.79C)	Not available	2.5 (Air=1)	Not available	Slightly soluble	Not available	Not available	Not available	Not available

Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
71 g/mol	NF3	0.187 lb/ft3 (0.0030 g/cm3) at 70 F (21 C) Note: (as vapor)	Not available	100%	Not available	

Section 10: Stability and Reactivity

Stability	Conditions to Avoid	Incompatible Materials
Stable at normal temperatures and pressures.	Stable at normal temperatures and pressures.	Ammonia, carbon monoxide, diborane, hydrogen, hydrogen sulfide, methane, tetrafluorohydrazine, natural rubber, oil, grease, flammable materials, and reducing agents

Hazardous Decomposition Products	Possibility of Hazardous Reactions
Fumes of fluorides. May form tetrafluorohydrazine (N2F4), a material sensitive to heat and shock.	May polymerize.

Section 11: Toxicology Information

Acute Effects

Oral LD50	Dermal LD50	Inhalation
LD50 Intraperitoneal Rat 26 mg/kg	LC50 Inhalation Gas. Rat 6700 ppm 1 hours	Causes breathing difficulty, eye irritation, formation of methemoglobin in the blood and cyanosis (blue discoloration) of the skin, particularly the lips, fingernails, and ears. High concentrations cause lung damage and delayed pulmonary edema. Odor and irritation cannot be used as warning signs of dangerous toxicity. Lack of oxygen can kill.

Eye Irritation	Skin Irritation	Sensitization
Irritation (possibly severe), blurred vision	Irritation	Acts on blood causing damage to central nervous system.

Chronic Effects

Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Not known	Not known	Not known	No data

Section 12: Ecological Information

Fate and Transport

Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Return cylinder to supplier. Dispose of in accordance with federal and local regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
NITROGEN TRIFLUORIDE	UN2451	2.2	Not applicable	Nonflammable gas, oxidizer	75 kg or L	150 kg	N/A

Canadian Transportation of Dangerous Goods

Shipping Name	UN Number	Class	Packing Group / Risk Group
NITROGEN TRIFLUORIDE	UN2451	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

CERCLA Sections	SARA 355.30	SARA 355.40
Not regulated.	Not regulated.	Not regulated.

SARA 370.21

Acute	Chronic	Fire	Reactive	Sudden Release
Yes	No	Yes	No	Yes

SARA 372.65

Not regulated.

OSHA Process Safety

5000 LBS TQ

State Regulations

CA Proposition 65

Not listed.

Canadian Regulations

WHMIS Classification
Listed on inventory

National Inventory Status

US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Listed on inventory.	Listed	Listed on DSL.

Section 16: Other Information

NFPA Rating
HEALTH=1 FIRE=0 INSTABILITY=0 SPECIAL=OX

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard