

Issue Date: 04-May-2023

Revision Date: 01-Jul-2024

Version 2

## 1. IDENTIFICATION

### Product identifier

**Product Name** Nitrogen Trifluoride

### Other means of identification

**SDS #** EF-073

**UN/ID No** UN2451

### Recommended use of the chemical and restrictions on use

**Recommended Use** Synthetic/Analytical chemistry.

### Details of the supplier of the safety data sheet

#### **Supplier Address**

EFC Gases & Advanced Materials  
3266 Bergey Road  
Hatfield, PA 19440  
Email: [efcsafety@efcgases.com](mailto:efcsafety@efcgases.com)

### Emergency telephone number

**Company Phone Number** 215-443-9600  
**Emergency Telephone** INFOTRAC 1-352-323-3500 (International)  
1-800-535-5053 (North America)

## 2. HAZARDS IDENTIFICATION

**Appearance** Colorless compressed gas

**Physical state** Gas

**Odor** Characteristic

### Classification

Acute toxicity - Inhalation (Gases)	Category 4
Specific target organ toxicity (repeated exposure)	Category 2
Oxidizing gases	Category 1
Gases under pressure	Compressed gas

### Signal Word

**Danger**

### Hazard statements

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



**Precautionary Statements - Prevention**

Use only outdoors or in a well-ventilated area  
 Do not breathe dust/fume/gas/mist/vapors/spray  
 Keep reduction valves free from grease and oil  
 Keep/Store away from clothing/ combustible materials

**Precautionary Statements - Response**

Get medical advice/attention if you feel unwell  
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
 Call a poison center or doctor/physician if you feel unwell  
 In case of fire: Stop leak if safe to do so

**Precautionary Statements - Storage**

Store in a well-ventilated place  
 Protect from sunlight. Store in a well-ventilated place

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No	Weight-%
Nitrogen trifluoride	7783-54-2	100

\*\*If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.\*\*

### 4. FIRST AID MEASURES

**Description of first aid measures**

<b>General Advice</b>	Provide this SDS to medical personnel for treatment.
<b>Eye Contact</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention if irritation persists.
<b>Skin Contact</b>	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Clean shoes thoroughly before reuse. Wash contaminated clothing before reuse. Get medical attention.
<b>Inhalation</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
<b>Ingestion</b>	As this product is a gas, refer to the inhalation section.

**Most important symptoms and effects, both acute and delayed**

<b>Symptoms</b>	Harmful if inhaled. May cause damage to organs through prolonged or repeated exposure. Contact with rapidly expanding gas may cause burns or frostbite.
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**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician** Treat symptomatically.

**5. FIRE-FIGHTING MEASURES****Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media** Not determined.

**Specific Hazards Arising from the Chemical**

Contains gas under pressure; may explode if heated. May cause or intensify fire; oxidizer.

**Hazardous combustion products** Nitrogen oxides (NOx). Halogenated compounds.

**Protective equipment and precautions for firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, protective equipment and emergency procedures**

**Personal Precautions** Evacuate personnel to safe areas. Keep unnecessary people away, isolate hazard area and deny entry. Shut off all ignition sources. Provide adequate ventilation.

**For Emergency Responders** Use personal protection recommended in Section 8.

**Environmental precautions**

**Environmental precautions** See Section 12 for additional Ecological Information.

**Methods and material for containment and cleaning up**

**Methods for Containment** Prevent further leakage or spillage if safe to do so.

**Methods for Clean-Up** Stop leak if possible without personal risk. Isolate area until gas has dispersed.

**7. HANDLING AND STORAGE****Precautions for safe handling**

**Advice on Safe Handling** Handle in accordance with good industrial hygiene and safety practice. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume/gas/mist/vapors/spray. Keep reduction valves free from grease and oil. Keep/store away from clothing and other combustible materials.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from sunlight.

**Incompatible Materials** None known based on information supplied.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Nitrogen trifluoride 7783-54-2	TWA: 10 ppm	TWA: 10 ppm TWA: 29 mg/m <sup>3</sup> (vacated) TWA: 10 ppm (vacated) TWA: 29 mg/m <sup>3</sup>	IDLH: 1000 ppm TWA: 10 ppm TWA: 29 mg/m <sup>3</sup>

### Appropriate engineering controls

**Engineering Controls** Apply technical measures to comply with the occupational exposure limits.

### Individual protection measures, such as personal protective equipment

**Eye/Face Protection** Wear safety glasses with side shields (or goggles). Refer to 29 CFR 1910.133 for eye and face protection regulations.

**Skin and Body Protection** Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Wear protective clothing. Refer to 29 CFR 1910.138 for appropriate skin and body protection.

**Respiratory Protection** Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Refer to 29 CFR 1910.134 for respiratory protection requirements.

**General Hygiene Considerations** Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Physical state</b>	Gas	<b>Odor</b>	Characteristic
<b>Appearance</b>	Colorless compressed gas	<b>Odor Threshold</b>	Not determined
<b>Color</b>	Colorless		
<b><u>Property</u></b>	<b><u>Values</u></b>	<b><u>Remarks • Method</u></b>	
<b>pH</b>	No data available		
<b>Melting point / freezing point</b>	-208.5 °C / -343.3 °F		
<b>Initial boiling point and boiling range</b>	-129 °C / -200.2 °F		
<b>Flash point</b>	No data available		
<b>Evaporation Rate</b>	Not determined		
<b>Flammability (Solid, Gas)</b>	Not determined		
<b>Flammability Limit in Air</b>			
<b>Upper flammability or explosive limits</b>	No data available		
<b>Lower flammability or explosive limits</b>	No data available		
<b>Vapor Pressure</b>	657.2 (psia)		
<b>Vapor Density</b>	2.46	(Air=1)	
<b>Relative Density</b>	Not determined		
<b>Water Solubility</b>	Not determined		
<b>Solubility in other solvents</b>	Not determined		
<b>Partition Coefficient</b>	Not determined		

<b>Autoignition temperature</b>	No data available
<b>Decomposition temperature</b>	Not determined
<b>Kinematic viscosity</b>	Not determined
<b>Dynamic Viscosity</b>	Not determined
<b>Explosive Properties</b>	Not determined
<b>Oxidizing Properties</b>	Not determined

**Other information**

<b>Softening Point</b>	Critical temperature: -39.2°C (-38.6°F)
<b>Molecular weight</b>	71 g/mole
<b>VOC Content</b>	Molecular formula F3-N
<b>Liquid Density</b>	Gas density (lb/ft3) 0.1836
<b>Bulk density</b>	Specific Volume (ft3/lb) 5.4466

**10. STABILITY AND REACTIVITY****Reactivity**

Not reactive under normal conditions.

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

None under normal processing.

**Hazardous Polymerization**      Hazardous polymerization does not occur.

**Conditions to Avoid**

Keep out of reach of children.

**Incompatible materials**

None known based on information supplied.

**Hazardous decomposition products**

None known based on information supplied.

**11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure****Product Information**

**Eye Contact**      Avoid contact with eyes.

**Skin Contact**      Avoid contact with skin.

**Inhalation**      Harmful if inhaled.

**Ingestion**      Do not ingest.

**Component Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Nitrogen trifluoride 7783-54-2	-	-	= 6700 ppm ( Rat ) 1 h

**Symptoms related to the physical, chemical and toxicological characteristics**

**Symptoms** Please see section 4 of this SDS for symptoms.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Carcinogenicity** Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

**STOT - repeated exposure** May cause damage to organs through prolonged or repeated exposure.

**Numerical measures of toxicity**

The following values are calculated based on chapter 3.1 of the GHS document Not determined.

**12. ECOLOGICAL INFORMATION****Ecotoxicity**

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Persistence/Degradability**

Not determined.

**Bioaccumulation**

There is no data for this product.

**Mobility**

Not determined

**Other adverse effects**

Not determined

**13. DISPOSAL CONSIDERATIONS****Waste Treatment Methods**

**Disposal of Wastes** Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated Packaging** Disposal should be in accordance with applicable regional, national and local laws and regulations.

**14. TRANSPORT INFORMATION**

**Note** Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

**DOT**

<b>UN/ID No</b>	UN2451
<b>Proper Shipping Name</b>	Nitrogen Trifluoride
<b>Transport hazard class(es)</b>	2.2
<b>Subsidiary Hazard Class</b>	5.1

**IATA**

UN number or ID number UN2451  
 Proper Shipping Name Nitrogen Trifluoride  
 Transport hazard class(es) 2.2  
 Subsidiary hazard class 5.1

**IMDG**

UN number or ID number UN2451  
 Proper Shipping Name Nitrogen Trifluoride  
 Transport hazard class(es) 2.2  
 Subsidiary Hazard Class 5.1

**15. REGULATORY INFORMATION****International Inventories**

Chemical name	TSCA	TSCA Inventory Status	DSL/NDSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Nitrogen trifluoride	X	ACTIVE	X	X	X	X	X	X	

**Legend:**

*TSCA* - United States Toxic Substances Control Act Section 8(b) Inventory  
*DSL/NDSL* - Canadian Domestic Substances List/Non-Domestic Substances List  
*EINECS/ELINCS* - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances  
*ENCS* - Japan Existing and New Chemical Substances  
*IECSC* - China Inventory of Existing Chemical Substances  
*KECL* - Korean Existing and Evaluated Chemical Substances  
*PICCS* - Philippines Inventory of Chemicals and Chemical Substances  
*AICS* - Australian Inventory of Chemical Substances

**US Federal Regulations****CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

**US State Regulations****California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

Chemical name	New Jersey	Massachusetts	Pennsylvania
Nitrogen trifluoride 7783-54-2	X		X

**16. OTHER INFORMATION**

<b><u>NFPA</u></b>	<b>Health hazards</b>	<b>Flammability</b>	<b>Instability</b>	<b>Special hazards</b>
	-	-	-	-
<b><u>HMIS</u></b>	<b>Health hazards</b>	<b>Flammability</b>	<b>Physical hazards</b>	<b>Personal Protection</b>
	-	-	-	Not determined

Issue Date: 04-May-2023  
 Revision Date: 01-Jul-2024  
 Revision Note: Regulatory review

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**