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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name	Nitrogen trifluoride
Chemical description	Nitrogen trifluoride
CAS N°	7783-54-2
CE N°	232-007-1
Index N°	-
Registration n°	01-2119962459-23
Chemical formula	NF ₃

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Industrial and professional Test gas/Calibration gas Laboratory use Chemical reaction / Synthesis Manufacture of electronic/photovoltaic components. Contact supplier for more information on uses
Uses advised against	For use by industrial or professional users only

1.3. Details of the supplier of the safety data sheet

Company identification	MULTIGAS Route de l'Industrie 102 CH-1564 Domdidier
Phone number	+41 (0) 26 676 94 94
E-mail address	info@multigas.ch

1.4. Emergency telephone numbers


145 (Toxicology Centre Zurich) or +41 (0) 44 251 51 51
+41 (0) 26 676 94 94 (Multigas)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Oxidising Gases, Category 1	H270
Gases under pressure : Liquefied gas	H280

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Acute toxicity (inhalation: gas) Category 4 H332

Specific target organ toxicity — Repeated exposure, Category 2 H373

For the complete H-sentences texts mentioned in that chapter, refer to Section 16

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms



GHS03

GHS04

GHS07

GHS08

Signal word

Hazard statements

H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated
H332	Harmful if inhaled
H373	May cause damage to organs through prolonged or repeated exposure

Precautionary statements

P220	Keep away from combustible materials
P244	Keep valves and fittings free from oil and grease
P260	Do not breathe gas, vapours
P304+P340+P315	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice / attention
P370+P376	In case of fire: stop leak if safe to do so
P410+P403	Protect from sunlight. Store in a well-ventilated place


2.3. Other hazards

Contact with liquid may cause cold burns/frostbite

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	Concentration	Classification
Nitrogen trifluoride	(CAS-No.) 7783-54-2 (EC-No.) 232-007-1 (EC Index-No.) --- (Registration-No.) 01-2119962459-23	100%	Ox. Gas 1, H270 Press. Gas (Liq.), H280 Acute Tox. 4 (Inhalation: gas), H332 STOT RE 2, H373

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For the complete H-sentences texts mentioned in that chapter, refer to Section 16

Contains no other components or impurities which will influence the classification of the product

3.2. Mixtures

Not established

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice	See a doctor. Show this safety data sheet to the attending physician
In case of inhalation	In case of inhalation, remove the person from the contaminated area. In case of respiratory arrest, give artificial respiration. See a doctor
In case of skin contact	In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance
In case of eyes contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a doctor
In case of ingestion	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. See a doctor

4.2. Most important symptoms and effects, both acute and delayed

Delayed adverse effects possible
Prolonged or repeated exposure may affect the red blood cells and haemoglobin
Refer to section 11

4.3. Indication of any immediate medical attention and special treatment needed

May cause temporary eye irritation


SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Water spray or water mist. Dry powder. Carbon dioxide. Foam
Unsuitable extinguishing media	None

5.2. Special hazards arising from the substance or mixture

Specific hazards	Maintaining combustion In case of fire or excessive heat, hazardous combustion products may be produced Exposure to fire may cause containers to rupture/explode
Hazardous combustion products	In case of fire or excessive heat, hazardous combustion products may be produced such as : hydrogen fluoride, nitric oxide, nitrogen dioxide

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5.3. Additional information

Cool endangered receptacles with water spray jet from a protected position

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid breathing vapours, spray mists or gases

Provide adequate ventilation

Eliminate ignition sources

Evacuate personnel to a safe place. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous

Personal protective equipment, see section 8

6.2. Environmental precautions

Try to stop the leak

6.3. Methods and material for containment and cleaning up

Ventilate the area

Keep area evacuated and free from ignition sources until any spilled liquid has evaporated (ground free from frost)

6.4. Reference to other sections

See also sections 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes

Avoid breathing vapour or mist

Keep away from sources of ignition - No smoking

Take measures to prevent the accumulation of electrostatic charges

For precautions, see section 2.2


7.2. Conditions for safe storage, including any incompatibilities

Store in a cool place. Keep container tightly closed in a dry and well-ventilated place

Content under pressure

7.3. Specific end use(s)

None

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Components with occupational exposure limits

Component	CAS N°	Exposure value type	Control parameter	Source
Nitrogen trifluoride	7783-54-2	TWA	10 ppm	SUVA: Limit values of exposure to workstations
			30 mg/m ³	
		OEL	-	SUVA: Limit values of exposure to workstations
			-	

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation
 Gas detectors should be used when flammable / toxic gases / vapours are likely to be released

8.2.2. Individual protection measures, e.g. personal protective equipment

Eye/face protection Wear goggles and a face shield when transfilling or breaking transfer connections. Standard EN 166 - Personal eye-protection

Skin / hand protection Wear protective gloves when handling gas cylinders. Standard EN 388- Protective gloves against mechanical hazards
 Wear cold insulating gloves when transferring or disconnecting transfer lines Standard EN 511 - Insulating gloves against cold
 Wearing chemical resistant gloves Standard EN 374-Protective gloves against chemicals
 For short and long-term use
 Material: Butyl rubber
 Glove thickness: 0.3 mm
 Penetration time: 30 min
 Have appropriate, chemical-resistant protective clothing ready for use in emergencies. Norm EN943-1

Respiratory protection Self-contained breathing apparatus (SCBA) or positive pressure air mask must be used in oxygenated atmospheres. Standard EN 137 - Self-contained compressed air device with a full face mask

8.2.3. Environmental exposure controls

-


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SECTION 9: Physical and chemical properties
9.1. Information on basic physical and chemical properties
Appearance

- **Physical state at 20°C / 101.3kPa** Gas
- **Colour** Colourless

Odour	Moldy
Odour threshold	No data available
pH	No data available
Melting point / Freezing point	-208.5°C
Boiling point	-129°C
Flash point	No data available
Evaporation rate	No data available
Flammability (solid, gas)	Non-flammable
Explosive limits	No data available
Vapour pressure [-40°C]	44.52 bar
Vapour pressure [50°C]	No data available
Vapour density	No data available
Relative density, liquid (water=1)	1.5
Relative density, gas (air=1)	2.44
Water solubility	21.5 mg/l
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidising properties	No data available

9.2. Other information

Molar mass	71.01 g/mole
Critical temperature [°C]	-39.0°C
Relative density, gas	Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level

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SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below

10.2. Chemical stability

Stable under recommended storage conditions

10.3. Possibility of hazardous reactions

Violently oxidises organic material

May react violently with combustible materials

May react violently with reducing agents

10.4. Conditions to avoid

Avoid moisture in the installation

10.5. Incompatible materials

May react violently with combustible materials

May react violently with reducing agents

Keep equipment free from oil and grease

Consider the potential risk of toxicity due to the presence of chlorinated or fluorinated polymers in oxygen lines at high pressure (>30 bar), in case of combustion

For additional information on compatibility refer to ISO 11114


10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced

SECTION 11: Toxicological information

11.1. Chemical safety assessment

Acute toxicity	Harmful if inhaled
Skin corrosion/irritation	No data available
Serious eye damage/irritation	No data available
Respiratory or skin sensitisation	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
STOT-single exposure – Target organ(s)	Damage to red blood cells (haemolytic poison)
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure Prolonged or repeated exposure may affect the red blood cells and haemoglobin (heart, liver, blood)

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Ingestion hazard No data available

11.2 Additional information

No data available

SECTION 12: Ecological information

12.1. Toxicity

Assessment No environmental damage caused by this product

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

The product is supposed to be biodegradable, so its persistence in aquatic environments is expected to be low

12.4. Mobility in soil

Because of its high volatility, the product is unlikely to cause land or water pollution

12.5. Results of PBT and vPvB assessment

PBT / vPvB assessment is not available because the chemical safety assessment is not required / is not conducted

12.6. Endocrine disrupting properties

No data available

12.7. Other adverse effects

Global warming potential: 17,200

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product	Must not be released into the atmosphere Burn in a chemical incinerator equipped with an afterburner and scrubber Return to the supplier the product not consumed in its original container
Contaminated container	Eliminate as unused product Contact the supplier if instructions are needed
OMoD Code	16 05 04

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Gases in pressure containers (including halons) containing hazardous substances

SECTION 14: Transport information

14.1. UN number

Transport par road/rail ADR / RID	Transport by sea IMDG	Transport by air IATA
2451	2451	2451

14.2. UN proper shipping name

Transport par road/rail ADR / RID	Transport by sea IMDG	Transport by air IATA
Nitrogen trifluoride	Nitrogen trifluoride	Nitrogen trifluoride

14.3. Transport hazard class(es)

Labelling



ADR/RID
 IMDG
 IATA

2.2 : Non-flammable, non-toxic gases
 5.1 : Oxidizing substances

14.4. Packing group

ADR/RID
 IMDG
 IATA

Not established

14.5. Environmental hazards

ADR/RID
 IMDG
 ICAO-TI / IATA-DGR


None
 None
 None

14.6. Special precautions for user

No data available

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

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SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety data sheet complies with the requirements of Regulation (CE) No. 1907/2006

15.2. Chemical safety assessment

A CSA has been carried out

SECTION 16: Other information


Indication of changes	Revised safety data sheet in accordance with commission regulation (EU) No 2015/830
Abbreviations and acronyms	<p>ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road</p> <p>CAS : Chemical Abstract Service number (USA)</p> <p>CLP : Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008</p> <p>CSA : Chemical Safety Assessment</p> <p>EIGA : European Industrial Gases Association</p> <p>EINECS : European Inventory of Existing Commercial Chemical Substances</p> <p>EN : European Standard</p> <p>ATE : Acute Toxicity Estimate</p> <p>IATA : International Air Transport Association</p> <p>IMDG Code : International Maritime Dangerous Goods Code</p> <p>LC50 : Lethal Concentration to 50 % of a test population</p> <p>OMoD : Swiss Ordinance on the movement of waste</p> <p>PBT : Persistent, Bioaccumulative and Toxic</p> <p>PPE: Personal Protection Equipment</p> <p>REACH : Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006</p> <p>RID : Regulations concerning the international carriage of dangerous goods by rail</p> <p>RMM : Risk Management Measures</p> <p>STOT-SE : Specific Target Organ Toxicity - Single Exposure</p> <p>UN : United Nations</p> <p>vPvB : Very Persistent and Very Bioaccumulative</p> <p>WGK: Water Hazards Class</p>

Full text of H, EUH and P statements used in sections 2 and 3

Hazard statements

H270

May cause or intensify fire; oxidizer

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- | | |
|------|---|
| H280 | Contains gas under pressure; may explode if heated |
| H332 | Harmful if inhaled |
| H373 | May cause damage to organs through prolonged or repeated exposure |

Precautionary statements

- | | |
|----------------|---|
| P220 | Keep away from combustible materials |
| P244 | Keep valves and fittings free from oil and grease |
| P260 | Do not breathe gas, vapours |
| P304+P340+P315 | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice / attention |
| P370+P376 | In case of fire: stop leak if safe to do so |
| P410+P403 | Protect from sunlight. Store in a well-ventilated place |

Disclaimer of liability

Details given in this document have been prepared based on the most available reliable documents and are believed to be correct at the time of going to press

They do not claim to be exhaustive and should be considered as a guide