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

1.1. Product identifier

Trade name	Mixture 0.1% trans-CF_3CHCHF, 20.9% O_2 in N_2
Chemical description	0.1% trans-1,3,3,3-Tetrafluoroprop-1-ene, 20.9% O_2 in N_2
CAS N°	-
CE N°	-
Index N°	-
Registration n°	Listed in Annex IV / V REACH, exempted from registration
Chemical formula	trans-CF3CHCHF, O_2, N_2

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

Relevant identified uses	Industrial and professional Laboratory use Contact the supplier for more information on use
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]

Gases under pressure : Compressed gas	H280

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

GHS04

Signal word Warning

Hazard statements

H280 Contains gas under pressure; may explode if heated

Precautionary statements

P410+403 Protect from solar radiation. Store in a well-ventilated place

2.3. Other hazards

Asphyxiant in high concentrations

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	Concentration	Classification
Nitrogen	(CAS-No.) 7727-37-9 (EC-No.) 231-783-9 (EC Index-No.) --- (Registration-No.) --	79%	Press. Gas (Comp.), H280
Oxygen	(CAS-No.) 7782-44-7 (EC-No.) 231-956-9 (EC Index-No.) 008-001-00-8 (Registration-No.) --	20.9%	Ox. Gas 1, H270 Press. Gas (Comp.), H280
Trans-1,3,3,3-Tetrafluoroprop-1-ene (R1234ze)	(CAS-No.) 29118-24-9 (EC-No.) 471-480-0 (EC Index-No.) -- (Registration-No.) 01-0000019758-54	0.1%	Press. Gas (Liq.), H280

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 advices — 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 — No adverse effects expected

In case of eyes contact — No adverse effects expected

In case of ingestion — 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

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation

Refer to section 11

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

Data not available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media — The product itself does not burn

Use appropriate extinguishing media to smother the fire

Unsuitable extinguishing media — Do not use water jet

5.2. Special hazards arising from the substance or mixture

Specific hazards — Exposure to fire may cause containers to rupture/explode

Hazardous combustion products — None

5.3. Additional information

Wear self-contained breathing apparatus for firefighting, if necessary

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid breathing vapours, spray mists or gases

Provide adequate ventilation

Evacuate the staff to safe place

Personal protective equipment, see section 8

6.2. Environmental precautions

-

6.3. Methods and material for containment and cleaning up

-

6.4. Reference to other sections

See also sections 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

See also sections 8 and 13

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

Containers must not be exposed to temperatures above 50°C

Pressurized contents

7.3. Specific end use(s)

-

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Components with occupational exposure limits

Component	CAS N°	Exposure value type	Value	Source
Nitrogen	7727-37-9	TWA	-	No occupational exposure limit value
			-	
		OEL	-	
			-	
Oxigen	7727-37-9	TWA	-	No occupational exposure limit value
			-	
		OEL	-	
			-	

Trans 1,3,3,3-Tetrafluoroprop-1-ene (HFO-1234ze)	29118-24-9	TWA	1’000 ppm	SUVA: Limit values of exposure to workstations
			4’700 mg/m^3	
		OEL	2’000 ppm	SUVA: Limit values of exposure to workstations
			9’400 mg/m^3	

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation

Oxygen detectors should be used when asphyxiating gases may be released

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

Eye/face protection	Wear safety glasses with side shields. Standard EN 166
Skin / hand protection	Wear working gloves when handling gas containers. Standard EN 388 - Protective gloves against mechanical risk
Respiratory protection	Self-contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask

8.2.3. Environmental exposure controls

-

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	Odourless
Odour threshold	Data not available
pH	Data not available
Melting point / Freezing point	Data not available
Boiling point	Data not available
Flash point	Data not available
Evaporation rate	Data not available
Flammability (solid, gas)	Not flammable

Explosive limits	Data not available
Vapour pressure [20°C]	Data not available
Vapour pressure [50°C]	Data not available
Vapour density	Data not available
Relative density, liquid (water=1)	Data not available
Relative density, gas (air=1)	0.9987
Water solubility	Data not available
Partition coefficient n-octanol/water (Log Kow)	Data not available
Auto-ignition temperature	Data not available
Decomposition temperature	Data not available
Viscosity	Data not available
Explosive properties	Data not available
Oxidising properties	Data not available

9.2. Other information

Molar mass	28.92 g/mol
Critical temperature [°C]	Data not available
Relative density	0.9987 Lower or close to air

SECTION 10: Stability and reactivity

10.1. Reactivity

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

10.2. Chemical stability

Stable under the recommended storage conditions

10.3. Possibility of hazardous reactions

Data not available

10.4. Conditions to avoid

None under the recommended conditions of use and storage (see section 7)

10.5. Incompatible materials

No reaction with usual materials in dry or damp conditions
For additional information on compatibility refer to ISO 11114 standard

10.6. Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1. Chemical safety assessment

Acute toxicity	Data not available
Skin corrosion/irritation	No adverse effects expected with this product
Serious eye damage/irritation	In the event of direct contact with the eyes, consult a doctor
Respiratory or skin sensitisation	Data not available
Germ cell mutagenicity	Data not available
Carcinogenicity	Data not available
Reproductive toxicity	Data not available
STOT-single exposure – Target organ(s)	Data not available
STOT-repeated exposure	Data not available
Aspiration hazard	Data not available

11.2 Information on other hazards

The substance/mixture has no endocrine disrupting properties

SECTION 12: Ecological information

12.1. Toxicity

Assessment No information is available on the product itself

12.2. Persistence and degradability

Data not available

12.3. Bioaccumulative potential

Data not available

12.4. Mobility in soil

Data not available

12.5. Results of PBT and vPvB assessment

No data available. PBT / vPvB assessment not available as chemical safety assessment not required / not conducted

12.6. Endocrine-disrupting properties

Can contribute to the greenhouse effect when released in large quantities
Global warming potential trans-1,3,3,3-Tetrafluoroprop-1-ene: 7

12.7. Other adverse effects

This product is not associated with any known ecological toxicological effects

Effect on the ozone layer — No known effect with this product

Ozone depletion potential — None

Effect on global warming — Can contribute to the greenhouse effect when released in large quantities

Global warming potential
Components: trans-1,3,3,3-Tetrafluoroprop-1-ene — 7

Ce produit n'est associé à aucun effet toxicologique écologique connu

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product — Must not be released into the atmosphere

Contaminated container — Return unused product in original cylinder to supplier

OMoD Code — 16 05 05
Gases in pressure containers other than those mentioned in 16 05 04

SECTION 14: Transport information

14.1. UN number

Transport par road/rail ADR / RID	Transport by sea IMDG	Transport by air IATA
1956	1956	1956

14.2. UN proper shipping name

Transport par road/rail ADR / RID	Transport by sea IMDG	Transport by air IATA
COMPRESSED GAS, N.O.S., (NITROGEN, TRANS-1,3,3,3-TETRAFLUOROPROP-1-ENE)	COMPRESSED GAS, N.O.S., (NITROGEN, TRANS-1,3,3,3-TETRAFLUOROPROP-1-ENE)	COMPRESSED GAS, N.O.S., (NITROGEN, TRANS-1,3,3,3-TETRAFLUOROPROP-1-ENE)

14.3. Transport hazard class(es)

Labelling

ADR/RID **IMDG** **IATA**	2.2 : Non-flammable, non-toxic gases

14.4. Packing group

ADR/RID **IMDG** **IATA**	-

14.5. Environmental hazards

ADR/RID	No
IMDG	No
ICAO-TI / IATA-DGR	No

14.6. Special precautions for user

Data not available

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

Not applicable

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 does not need to be carried out for this product

SECTION 16: Other information

Indication of changes

Revised safety data sheet in accordance with commission regulation (EU) No 2015/830

Abbreviations and acronyms

ADR :	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS :	Chemical Abstract Service number (USA)
CLP :	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
CSA :	Chemical Safety Assessment

EIGA :	European Industrial Gases Association
EINECS :	European Inventory of Existing Commercial Chemical Substances
EN :	European Standard
ATE :	Acute Toxicity Estimate
IATA :	International Air Transport Association
IMDG Code :	International Maritime Dangerous Goods Code
LC50 :	Lethal Concentration to 50 % of a test population
OMoD :	Swiss Ordinance on the movement of waste
PBT :	Persistent, Bioaccumulative and Toxic
PPE:	Personal Protection Equipment
REACH :	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID :	Regulations concerning the international carriage of dangerous goods by rail
RMM :	Risk Management Measures
STOT-SE :	Specific Target Organ Toxicity - Single Exposure
UN :	United Nations
vPvB :	Very Persistent and Very Bioaccumulative
WGK:	Water Hazards Class

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

Hazard statements

H280	Contains gas under pressure; may explode if heated

Precautionary statements

P410+403	Protect from solar radiation. 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