

R-134a (1,1,1,2,-Tetrafluorethan) Type test leak

Print date 22.10.2024
Revision date 22.10.2024
Version 1.0 (en)

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

1.1 Product identifier

Trade name/designation R-134a (1,1,1,2,-Tetrafluorethan) Type test leak
Substance name 1,1,1,2-tetrafluoroethane
EC No 212-377-0
REACH No. 01-2119459374-33
CAS No 811-97-2

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

Use of the substance/mixture
test gas

1.3 Details of the supplier of the safety data sheet

Supplier

INFICON GmbH
Bonner Straße 498
D-50968 Köln
Telephone +49(0)221- 56788-0
Telefax +49(0)221- 56788-90
E-mail leakdetection@inficon.com
Website www.inficon.com

Department responsible for information:
Entwicklung / Konstruktion (RESEARCH / DESIGN)
Telephone +49(0)221- 56788-354

1.4 Emergency telephone number

Giftinformationszentrale Bonn +49(0)228 - 19 240
(Advice in German and English)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Press. Gas (Liq.), H280

Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

2.2 Label elements

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

Hazard pictograms



GHS04

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Signal word

Warning

Hazard statements

H280 Contains gas under pressure; may explode if heated.

Precautionary statements

P280 Wear protective gloves/eye protection/face protection.
P284 In case of inadequate ventilation wear respiratory protection.
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

Supplemental hazard information

Contains fluorinated greenhouse gases

2.3 Other hazards

Adverse human health effects and symptoms

The mixture does not contain substances $\geq 0.1\%$ of substances that have endocrine disrupting properties according to Regulation (EC) No. 1907/2006, Article 59(1) or Regulation (EU) 2017/2100 or Regulation (EU) 2018/605.

Adverse environmental effects

The mixture does not contain substances $\geq 0.1\%$ of substances that have endocrine disrupting properties according to Regulation (EC) No. 1907/2006, Article 59(1) or Regulation (EU) 2017/2100 or Regulation (EU) 2018/605.

Other adverse effects

Danger of suffocation in case of accumulation in lowlying or closed rooms.
Refrigerated liquefied gas. Contact with the product can cause cold burns or frostbite.

Results of PBT and vPvB assessment

The mixture does not contain any substances that meet the PBT and/or vPvB criteria according to REACH, Annex XIII.

SECTION 3: Composition / information on ingredients

3.1 Substances

Substance name	1,1,1,2-tetrafluoroethane
EC No	212-377-0
REACH No.	01-2119459374-33
CAS No	811-97-2
ATE	ATE(inhalation gas): 500000 ppm

3.2 Mixtures

not applicable

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

If symptoms develop or in the event of uncertainty, seek medical attention.

Following inhalation

In high concentrations may cause asphyxiation.
Remove casualty to fresh air and keep warm and at rest.
In case of illness, seek medical advice.
If breathing is irregular or stopped, administer artificial respiration.

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Following skin contact

In case of contact with skin wash off with warm water.

After eye contact

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

Following ingestion

Ingestion is not considered a potential route of exposure.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms

Frostbite
Dyspnoea
Dizziness

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Product itself does not burn, adjust fire extinguishing measures to the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

Exposure to fire may cause containers to rupture / explode.
carbon oxides (COx)
Hydrogen fluoride

5.3 Advice for firefighters

Special protective equipment for firefighters

In case of fire: Wear self-contained breathing apparatus.
Use protective equipment.

Additional information

The product itself does not burn.
Co-ordinate fire-fighting measures to the fire surroundings.
Cool endangered containers with water spray and possibly remove them from fire site.
Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Avoid contact with eyes.
Do not inhale gases.
Provide adequate ventilation.
Keep people away and stay on the upwind side.

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For emergency responders

In case of fire: Wear self-contained breathing apparatus.

Wear protective gloves/protective clothing.

6.2 Environmental precautions

If possible stop gas leakage

6.3 Methods and material for containment and cleaning up

For cleaning up

Leave to vapourize.

Ventilate affected area.

6.4 Reference to other sections

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

Do not inhale gases.

Avoid:

Eye contact

Skin contact

Provide for appropriate ventilation/aspiration at the work station.

Advices on general occupational hygiene

Please observe work hygiene regulations.

When using do not eat, drink, smoke.

Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep/Store only in original container.

Keep container tightly closed in a cool, well-ventilated place.

Materials to avoid

Oxidising agent

Further information on storage conditions

Protect against:

Frost

UV-radiation/sunlight

Heat

7.3 Specific end use(s)

Recommendation

See section 1.2

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values

CAS No	EC No	Substance name	occupational exposure limit value
811-97-2	212-377-0	1,1,1,2-Tetrafluoroethane	1000 [ml/m3(ppm)] 4240 [mg/m3] (UK)

DNEL worker

CAS No	Substance name	DNEL value	DNEL type	Remark
811-97-2	1,1,1,2-tetrafluoroethane	13936 mg/m ³	long-term inhalative (systemic)	

DNEL Consumer

CAS No	Substance name	DNEL value	DNEL type	Remark
811-97-2	1,1,1,2-tetrafluoroethane	2476 mg/m ³	long-term inhalative (systemic)	

PNEC

CAS No	Substance name	PNEC Value	PNEC type	Remark
811-97-2	1,1,1,2-tetrafluoroethane	0.1 mg/L	aquatic, freshwater	
811-97-2	1,1,1,2-tetrafluoroethane	1 mg/L	aquatic, intermittent release	
811-97-2	1,1,1,2-tetrafluoroethane	0.01 mg/L	aquatic, marine water	
811-97-2	1,1,1,2-tetrafluoroethane	0.75 mg/kg	sediment, freshwater	
811-97-2	1,1,1,2-tetrafluoroethane	73 mg/L	sewage treatment plant (STP)	

8.2 Exposure controls

Appropriate engineering controls

Technical measures to prevent exposure

Sufficient ventilation and exhaustion.

Personal protection equipment

Eye/face protection

safety goggles, in case of increased risk add protective face shield.

The selected safety goggles must be in compliance with the specifications of EU Directive 89/686/EEC and the resultant standard EN 166.

Hand protection

Wear gloves to protect against mechanical injuries.

The protective gloves to be used must comply with the specifications of EC directive 89/686/EEC and the resultant standard EN374.

The selection of a suitable glove depends from manufacturer to manufacturer not only on the material, but also on further quality criteria.

The exact breakthrough time of the glove material is to be inquired from the protection glove manufacturer and must be strictly adhered to.

Body protection:

Protective clothing

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Respiratory protection

Respiratory protection necessary at:
high concentrations
Suitable respiratory protection apparatus:
Self-contained respirator (breathing apparatus)

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state

liquefied gas

Colour

colourless

Safety relevant basis data

	Value	Method	Source, Remark
Odour threshold:	not determined		
Melting point/freezing point	-101 °C		
Boiling point or initial boiling point and boiling range	-26.2 °C		
flammability	solid		not applicable
flammability	gaseous		not applicable
Lower and upper explosion limit	Upper explosion limit		not applicable
Lower and upper explosion limit	Lower explosion limit		not applicable
Flash point			not applicable
Auto-ignition temperature	> 750 °C		
Decomposition temperature	250		
pH	approx. 7		
Viscosity	not determined		
Solubility(ies)	Water solubility 1.5 g/L		
Partition coefficient n-octanol/water (log value)	1.68		CAS No811-97-2 1,1,1,2-tetrafluoroethane
Vapour pressure	5915 hPa (21.1°C)		
Vapour pressure	14713 hPa (54.4°C)		
Density and/or relative density	Density 1.2 g/cm ³		
Relative vapour density	3.5		
particle characteristics			not relevant

9.2 Other information

Other safety characteristics

	Value	Method	Source, Remark
Explosive properties			The product is not explosive

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Other information

Gas/vapours are heavier than air. They may Accumulate in confined spaces, in particular at or below ground.

SECTION 10: Stability and reactivity

10.1 Reactivity

The product is non-reactive under the recommended storage, use and temperature conditions.

10.2 Chemical stability

The product is stable under storage at normal ambient temperatures.

10.3 Possibility of hazardous reactions

No hazardous reaction when handled and stored according to provisions.

10.4 Conditions to avoid

Protect against heat and direct sunlight.

10.5 Incompatible materials

Oxidising agent

10.6 Hazardous decomposition products

halogenated compounds

Hydrogen fluoride

Carbonyl halide

Carbon oxides

Additional information

No risk of production of decomposition products when appropriately handled and stored.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Animal data

	Effective dose	Method,Evaluation	Source, Remark
Acute oral toxicity	not determined		
Acute dermal toxicity	not determined		
Acute inhalation toxicity	CAS No811-97-2 1,1,1,2-tetrafluoroethane Acute inhalation toxicity (gas) LC50: 500000 ppm Species Rat Exposure time 4 h		

Assessment/classification

Based on available data, the classification criteria are not met.

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Skin corrosion/irritation

Assessment/classification

Based on available data, the classification criteria are not met.

Serious eye damage/irritation

Assessment/classification

Based on available data, the classification criteria are not met.

Sensitisation to the respiratory tract

Assessment/classification

Based on available data, the classification criteria are not met.

Skin sensitisation

Assessment/classification

Based on available data, the classification criteria are not met.

Germ cell mutagenicity

not determined

Carcinogenicity

not determined

Reproductive toxicity

not determined

Overall Assessment on CMR properties

Based on available data, the classification criteria are not met.

STOT-single exposure

STOT SE 1 and 2

Assessment/classification

Based on available data, the classification criteria are not met.

STOT SE 3

Irritation to respiratory tract

Assessment/classification

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Assessment/classification

Based on available data, the classification criteria are not met.

Aspiration hazard

Assessment/classification

Based on available data, the classification criteria are not met.

11.2 Information on other hazards

Information on other hazards

	Effective dose	Method,Evaluation	Source, Remark
Endocrine disrupting properties			No data available

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Other information

Excessive inhalation of steam can cause headaches and feelings of dizziness.
 May cause frostbite.
 Gases have a suffocating effect.
 The product is to be handled with the caution usual with chemicals.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity

	Effective dose	Method,Evaluation	Source, Remark
Acute (short-term) fish toxicity	CAS No811-97-2 1,1,1,2-tetrafluoroethane LC50: 450 mg/L Test duration 96 h		
Chronic (long-term) fish toxicity	not determined		
Acute (short-term) toxicity to crustacea	CAS No811-97-2 1,1,1,2-tetrafluoroethane EC50 980 mg/L Test duration 48 h		
Chronic (long-term) toxicity to aquatic invertebrate	not determined		
Acute (short-term) toxicity to algae and cyanobacteria	CAS No811-97-2 1,1,1,2-tetrafluoroethane EC50 > 118 mg/L Species Selenastrum capricornutum Test duration 72 h	OECD 201	
Chronic (long-term) toxicity to aquatic algae and cyanobacteria	not determined		
Toxicity to other aquatic plants/organisms	not determined		
Toxicity to microorganisms	EC10 > 730 mg/L Species Pseudomonas putida Test duration 6 h		

Assessment/classification

Based on available data, the classification criteria are not met.

12.2 Persistence and degradability

	Value	Method	Source, Remark
Biodegradation	Degradation rate 3 % Test duration 28 d	OECD 301D/ EEC 92/69/V, C.4-E	CAS No811-97-2 1,1,1,2-tetrafluoroethane Not easily biodegradable.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

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12.5 Results of PBT and vPvB assessment

The mixture does not contain any substances that meet the PBT and/or vPvB criteria according to REACH, Annex XIII.

12.6 Endocrine disrupting properties

	Effective dose	Method,Evaluation	Source, Remark
Endocrine disrupting properties			No data available

12.7 Other adverse effects

Additional ecotoxicological information

Additional information

Avoid emission in atmosphere.
 Do not allow uncontrolled discharge of product into the environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste codes/waste designations according to EWC/AVV

Waste code packaging	Waste name
160505	gases in pressure containers other than those mentioned in 16 05 04

Appropriate disposal / Product

Dispose of waste according to applicable legislation.

Appropriate disposal / Package

Dispose of waste according to applicable legislation.

Remark

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

SECTION 14: Transport information

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN number or ID number	UN 2037	UN 2037	UN 2037
14.2 UN proper shipping name	RECEPTACLES, SMALL, CONTAINING GAS	RECEPTACLES, SMALL, CONTAINING GAS	Receptacles, small, containing gas
14.3 Transport hazard class(es)	2.2	2.2	2.2
14.4 Packing group	-	-	-
14.5 Environmental hazards	No	No	No

14.6 Special precautions for user

No data available

14.7 Maritime transport in bulk according to IMO instruments

not applicable
 The product is not intended for carriage in bulk.

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All transport carriers

Ensure sufficient ventilation, adhere to applicable regulations.
ADR u. IMDG: TRANSPORT AS: UN 2037 RECEPTACLES, SMALL CONTAINING GAS (GAS CARTIDGES),
2.2; not restricted as per Special Provision 191 (ADR, IMDG)
24h EMERGENCY CONTACT (TRANSPORT) +49(0)178 433 7434 (Consultank GmbH)

Land transport (ADR/RID)

UN number or ID number	UN 2037
UN proper shipping name	RECEPTACLES, SMALL, CONTAINING GAS
Transport hazard class(es)	2.2
Hazard label(s)	2.2
Classification code	5A
Packing group	-
Environmental hazards	No
Limited quantity (LQ)	1 L
Special provisions	191, 303, 327, 344
Tunnel restriction code	E

Sea transport (IMDG)

UN number or ID number	UN 2037
UN proper shipping name	RECEPTACLES, SMALL, CONTAINING GAS
Transport hazard class(es)	2.2
Packing group	-
Environmental hazards	No
Limited quantity (LQ)	1 L
Marine pollutant	No
EmS	F-D, S-U

Air transport (ICAO-TI / IATA-DGR)

UN number or ID number	UN 2037
UN proper shipping name	Receptacles, small, containing gas
Transport hazard class(es)	2.2
Packing group	-
Environmental hazards	No

SECTION 15: Regulatory information

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

No data available

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

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SECTION 16: Other information

Abbreviations and acronyms

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

Press. Gas (Liq.): Liquefied gas (LG)

Key literature references and sources for data

Data sheets of the sub-supplier.

Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]

The mixture is to be produced on the basis of the available hazard data of the ingredients, as defined in the classification criteria for mixtures for each hazard class in Annex I to Regulation (EC) No 1272/2008, classified.

Classification method:

Calculation

Test data

Additional information

National and local regulations concerning chemicals shall be observed.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

Relevant H- and EUH-phrases (Number and full text)

H280 Contains gas under pressure; may explode if heated.