

**SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

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**1.1. Product Identifier**

Substance identification:

Name: R134a  
CAS Number: 00811-97-2  
EC Number: 212-377-0  
REACH Number: 01-2119459374-33-0010

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

Recommended use:

Refrigerant gas  
Industrial and professional  
Expanding  
Aerosol propellant

**1.3. Details of the supplier of the safety data sheet**

Company:

TAZZETTI S.P.A  
CORSO EUROPA 600/A  
10088 VOLPIANO (TO) - ITALY-  
Tel. +39 02 66101029 (24 h / 24 h)  
rsg.inquiry@tazzetti.com

**1.4. Italian Emergency telephone number**

Ph +39 02 66101029 (24h / 24h) – Poison centre Niguarda Hospital of Milan (Italy)

**SECTION 2. HAZARDS IDENTIFICATION**

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**2.1. Classification of the substance or mixture**

EC regulation criteria 1272/2008 (CLP):  
Warning, Liquef. Gas, Contains gas under pressure

**2.2. Label elements**

Symbols:



Signal word: Warning

Hazard statements:

H280 Contains gas under pressure; may explode if heated.

Precautionary statements:

P403 Store in a well ventilated place

P410 Protect from sunlight

P273 Avoid release to the environment.

P314 Get medical advice/attention if you feel unwell



## Special Provisions:

Contains fluorinated greenhouse gases covered by the Kyoto protocol.

### 2.3. Other hazards

Evaluation results PBT e vPvB : in accordance with Annex III of REACH, this substance does not contain any substance in compliance with PBT and vPvB criteria (<0.1% concentration).

Ecological and toxicological information: the substance does not contain components with endocrine disrupting properties in accordance with article 57(f) of REACH or in compliance with EU Regulations 2017/2100 and 2018/605 (<0,1% concentration).

Vapour heavier than air, may accumulate below ground level and cause choking.

Contact with liquid may cause cold burns/frostbite.

In high concentrations may cause asphyxiation.

Large doses may result in coma and death without warning symptoms, due to heart damage.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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### 3.1. Substances

Substance identification:

Name:	R134a
Chemical name:	1,1,1,2-Tetrafluoroethane
CAS Number:	00811-97-2
EC Number:	212-377-0
REACH Number:	01-2119459374-33-0010

**3.2. Mixtures** Not applicable

## SECTION 4. FIRST AID MEASURES

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### 4.1. Description of first aid measures

Skin contact:

In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

Eye contact:

In case of contact with eyes, rinse immediately (for at least 15 minutes) with plenty of water and seek medical advice.

Ingestion:

Do not induce vomiting. Obtain medical assistance.

Inhalation:

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

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

Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects., Other symptoms potentially related to misuse or inhalation abuse are: Anaesthetic effects, Light-headedness, dizziness, confusion, incoordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness. In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.

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

Do not administer catecholamines (due cardiac effects).



## SECTION 5. FIRE-FIGHTING MEASURES

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### 5.1. Extinguishing media

All known extinguishants can be used.

Extinguishing media which must not be used for safety reasons:

None in particular.

### 5.2. Special hazards arising from the substance or mixture

The product is not flammable in air, in a normal temperature and pressure conditions. Certain mixtures of the product with air, in certain conditions of pressure may be flammable. Avoid mixtures of the product with air, under pressure.

Certain mixtures of the product and chlorine may be flammable or reactive under certain conditions. Thermal decomposition causes the emission of fumes very toxic and corrosive gases (hydrogen fluoride). Please observe section 10.

Containers may explode if heated

Do not inhale explosion and combustion gases.

### 5.3. Advice for fire-fighters

Keep containers/tank cool with water spray. Move undamaged containers from immediate hazard area if it can be done safely

Use special protective equipment for firefighters, such as boots, overalls, gloves, eye and face protection and breathing apparatus: suitable breathing apparatus

## SECTION 6. ACCIDENTAL RELEASE MEASURES

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### 6.1. Personal precautions, protective equipment and emergency procedures

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

Evacuate area.

Ensure adequate air ventilation.

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

See protective measures under point 7 and 8.

### 6.2. Environmental precautions

Avoid discharge to atmosphere.

### 6.3. Methods and material for containment and cleaning up

Ventilate area.

### 6.4. Reference to other sections

See also section 8 and 13.

## SECTION 7. HANDLING AND STORAGE

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### 7.1. Precautions for safe handling

Do not allow backfeed into the container.

Use only equipment suitable for the product and the operating pressure.

Avoid contact with skin and eyes, inhalation of vapours and mists.

Only experienced and properly instructed persons should handle compressed gases.

The substance must be handled in accordance with good industrial hygiene and safety procedures.

Close container valve after each use and when empty, even if still connected to equipment.

Never attempt to repair or modify container valves or safety relief devices.

Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.



Never use direct flame to raise the pressure of a container.  
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.  
Do not cut, drill, grind, weld or do similar operations on containers.  
Please see also Section 8 for recommended protective equipment.

## 7.2. Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers.  
Keep container in a well ventilated place.  
Protect cylinders from physical damage; do not drag, roll, slide or drop.  
Keep away from open flames, sparks and heat sources.  
Keep container below 50 °C.  
Containers should not be stored in conditions likely to encourage corrosion.  
Incompatible materials:

Do not store with the following products: Self-reactive substances and mixtures, organic peroxides, oxidising agents, flammable liquids and solids, pyrophoric liquids and solids, self-heating substances and mixtures, Substances and mixtures, which emit flammable gases in contact with water, Explosives, Substances and mixtures with very acute toxicity, with acute toxicity and e with cronic toxicity.

Instructions as regards storage permises:  
Adequately ventilated.

## 7.3. Specific end use(s)

If annexed, please make reference to the scenario

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### 8.1. Control parameters

LELT (8 h TWA): 1000 (ml/m<sup>3</sup>)

LELT (8 h TWA): 4240 (mg/m<sup>3</sup>)

DNEL: Workers: 13936 mg/m<sup>3</sup> - Consumers: 2476 mg/m<sup>3</sup> - Exposure routes: Inhalation; Health effect: Chronic effects, Systemic toxicity.

PNEC: fresh water: 0.1 mg/l; marine water: 0.01 mg/l; water (Intermittent use/release): 1 mg/l; fresh water sediment: 0.75 mg/kg dry weight; water (sewage treatment plants): 73 mg/l.

### 8.2. Exposure controls

The product should be handled in a closed circuit.

Provide adequate general and local ventilation.

Make sure the exposure is well below the occupational exposure limits.

If the risk assessment indicates this is necessary, use the following protection

Eye protection:

If foreseeable a risk of spurts or squirts, please wear safety glasses with lateral protection in compliance with rule of law EN 166.

Protection for skin:

Protective clothing

Protection for hands:

If foreseeable a direct contact with liquid or with cold machineries/equipments for which exist a risk of cold burn, please use cold protection gloves in compliance with rule of law EN511 – 020.

Respiratory protection:

Wear self-contained breathing apparatus in compliance with EN 137 when entering area unless atmosphere is proved to be safe.

Thermal Hazards:

Contact with liquid may cause cold burns/frostbite.

Environmental exposure controls:

Refer to environment legislation



Contact with liquid may cause cold burns/frostbite.  
In high concentrations may cause asphyxiation.  
Vapour heavier than air, may accumulate below ground level and cause choking.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

Appearance:	Gas at 20°C
Colour:	Incolour
Odour:	Ethereal
Odour threshold:	Information non available
pH:	Not applicable to substance
Melting point / freezing point:	-108 ° C
Initial boiling point and boiling range:	-26.5 ° C
Solid/gas flammability:	Not applicable to substance
Upper/lower flammability or explosive limits:	Not applicable to substance
Vapour density:	3.6 (air=1)
Flash point:	Not applicable to substance
Evaporation rate:	> 1 (CCL4=1.0)
Vapour pressure:	5.7 bar (at 20°C)
Relative:	1.22 g/cm <sup>3</sup> (at 20°C)
Solubility in water:	Not tested
Solubility (in other substances):	1 g/l (25 °C)
Partition coefficient n-octanol/water (POW):	Alcohols, chlorinated solvents, polyethylene glycol
Auto-ignition temperature:	1.06 (at 25°C)
Auto-ignition temperature:	Not applicable to substance
Decomposition temperature:	> 743 °C
Viscosity:	Not tested
Particle characteristics:	Not tested
	Only apply to solids

### 9.2. Other information

Explosive properties:	Not applicable to substance
Oxidizing properties:	Substance not classified as oxidizing.
Autoignizione :	Substance not classified as pyrophoric

## SECTION 10. STABILITY AND REACTIVITY

### 10.1. Reactivity

The product is not flammable in air, in a normal temperature and pressure conditions. Certain mixtures of the product with air, under certain pressure conditions which may be flammable. Avoiding product mixtures with air under pressure.

Certain product mixtures and chlorine may be flammable or reactive under certain conditions. Thermal decomposition gas emissions very toxic and corrosive fumes (hydrogen fluoride)

### 10.2. Chemical stability

Stable in normal conditions

### 10.3. Possibility of hazardous reactions

Can react violently if in contact with alkali metals, alkaline earth metals.

### 10.4. Conditions to avoid



This substance is not flammable in air at temperatures <100°C (212 F) at atmospheric pressure. However, mixtures of this substance with high concentrations of air at elevated pressure and/or temperature may become flammable in the presence of an ignition source.

This substance can become combustible in an oxygen-enriched environment (higher oxygen concentrations than in air). How a mixture containing this substance and air or this substance in an oxygen-enriched atmosphere becomes combustible depends on the interrelationship between 1) the temperature 2) the pressure and 3) the proportion of oxygen in the mixture. In general, this substance should not coexist with air above atmospheric pressure or at high temperatures, or in an oxygen-enriched environment. For example, this substance should NOT be mixed with compressed air for leak detection or other purposes.

Avoid all possible sources of ignition (spark or flame). Do not cut, drill, grind or expose containers to heat.

## 10.5. Incompatible materials

Finely divided metals, magnesium and alloys containing more than 2% magnesium, powdered metal salts.

## 10.6. Hazardous decomposition products

Hydrogen fluoride by thermal decomposition and hydrolysis, carbon oxides, carbonyl fluoride, fluorocarbons.

## SECTION 11. TOXICOLOGICAL INFORMATION

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

Toxicological information of the substance:

Acute inhalation toxicity: LC50 (Rat): > 567000 ppm exposure time: 4 h

Atmosphere test: gas Method: Guidelines 403 OECD test

Level within which no effects are manifested (Dog cardiac sensitisation): 40000 ppm atmosphere test: gas

Level within which effects are manifested (Dog cardiac sensitisation): 80000 ppm atmosphere test: gas

Symptoms: may cause cardiac arrhythmia

Threshold limit value (Dog cardiac sensitisation): 334.000 mg/m<sup>3</sup> atmosphere test: gas

Symptoms: may cause cardiac arrhythmia

Skin irritation/corrosion: rabbit: mildly irritating.

Eye irritation/damage: rabbit: mildly irritating.

Respiratory sensitisation:

Exposure routes: Skin contact

Result: negative

Exposure routes: inhalation Species: Rat

Result: negative

Exposure routes: inhalation Species: Human

Result: negative

Mutagenicity of germ cells: in vitro genotoxicity: Bacterial reverse mutation test (AMES)

Method: Guidelines 471 OECD Test - Result: negative

Test: Chromosome aberration in vitro

Method: Guidelines 473 OECD Test - Result: negative

In vivo genotoxicity: Test: Micronucleus assay in mammalian erythrocytes (in vivo cytogenetic assay)

Species: Mouse - Exposure routes: inhalation (gas)

Method: Guidelines 474 OECD Test - Result: negative

Test: Unscheduled DNA synthesis (UDS) assay with mammalian liver cells in vivo

Species: Rat - Exposure routes: inhalation (gas)

Method: Guidelines 486 OECD Test - Result: negative

Mutagenicity of germ cells - Assessment: Evidence does not support classification as a germ cell mutagen.



## Carcinogenicity:

Species: Rat. Exposure routes: inhalation (gas) Exposure Time: 2 years

Method: Guidelines 453 OECD Test - Result: negative

Carcinogenicity - Assessment: Evidence does not support classification as carcinogenic.

## Toxicity to reproduction:

Effects on fertility: Species: Mouse - Exposure routes: inhalation Result: negative

Effects on fetal development:

Test: Repeated dose toxicity study combined with reproductive/developmental toxicity screening

Species: rabbit Exposure routes: inhalation (gas)

Method: Guidelines 414 OECD Test - Result: negative

Toxicity to reproduction- Assessment: Evidence does not support classification as toxic to reproduction

## STOT — single exposure:

Exposure routes: inhalation (gas)

Assessment: No significant health effects observed in animals at concentrations of 20000 ppmV/4h or less.

## STOT — repeated exposure:

Exposure routes: inhalation (gas)

Assessment: No significant health effects observed in animals at concentrations of di 250 ppmV/6h/g or less.

## STOT — repeated exposure:

Species: Rat, male and female NOAEL : 50000 ppm LOAEL : >50000 ppm

Exposure routes: inhalation (gas) Exposure time: 2 years

Method: Guidelines 453 OECD test

Aspiration hazard: not known

## 11.2 Informazioni su altri pericoli

Endocrine Disrupting Properties:

Assessment: the substance does not contain components with endocrine disrupting properties in accordance with article 57(f) of REACH or in compliance with EU Regulations 2017/2100 and 2018/605 (<0,1% concentration).

## SECTION 12. ECOLOGICAL INFORMATION

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### 12.1. Toxicity

Toxicity to fish: LC50 (Oncorhynchus mykiss-rainbow trout): 450 mg/l

Exposure time: 96 h Method: Regulation (EC) n. 440/2008, attached, C.1

Toxicity to daphnia and aquatic invertebrates: EC50 (Daphnia magna): 980 mg/l

Exposure time: 48 h Method: Regulation (EC) n. 440/2008, attached, C.2

Toxicity to aquatic plants: EC50r (green algae): > 100 mg/l

Exposure time: 96 h Remarks based on data obtained from similar substances.

### 12.2. Persistence and degradability

Biodegradability: Result: Not easily biodegradable.

Method: Guidelines 301D OECD test.

### 12.3. Bioaccumulative potential

Bioaccumulation: Remarks: Bioaccumulation is unlikely.

Partition coefficient n-octanol/water (POW) log Pow: 1,06

### 12.4. Mobility in soil

Diffusion in the various environmental compartments: Koc: 37,26, log Koc: 1,571



## 12.5. Results of PBT and vPvB assessment

Evaluation results PBT e vPvB : in accordance with Annex III of REACH, this substance does not contain any substance in compliance with PBT and vPvB criteria (<0.1% concentration).

## 12.6 Proprietà di interferenza con il sistema endocrino

Assessment: the substance does not contain components with endocrine disrupting properties in accordance with article 57(f) of REACH or in compliance with EU Regulations 2017/2100 and 2018/605 (<0,1% concentration).

## 12.7 Other adverse effects

Contains fluorinated greenhouse gases covered by the Kyoto protocol.  
GWP: 1430

## SECTION 13. DISPOSAL CONSIDERATIONS

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### 13.1. Waste treatment methods

Product: Dispose of in compliance with current legislation on the subject. According to the European Waste Catalogue, waste codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the responsible waste disposal authorities.  
Contaminated Containers: Empty containers should be taken to an approved site for recycling or disposal. Depressurized containers should be returned to the supplier. Dispose of as unused product unless otherwise specified.

## SECTION 14. TRANSPORT INFORMATION

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### 14.1. UN number

ADR/RID/IMDG/IATA - UN number: 3159

In case a substance is inside a refrigerating machine is applied the following n° ONU: 2857

### 14.2. UN proper shipping name:

ADR/RID/IMDG - Shipping name: 1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R134a)

IATA-Technical name: 1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R134a)

In case a substance is inside a refrigerating machine the shipping name will be: REFRIGERATING MACHINES containing non-flammable, no-toxic, gases or ammonia solutions (N° ONU 2672).

### 14.3. Transport hazard class(es)

ADR/RID-Class: 2

ADR-Label: 2.2

RID-Label: 2.2 (+13)

ADR/RID - Hazard identification number: 20

Classification code: 2A

IATA/IMDG - Class: 2.2

### 14.4. Packing Group

ADR/IMDG - Packing Group: -

### 14.5. Environmental hazards: No

### 14.6. Special Precautions for User

ADR-Tunnel restriction code: C/E

IMDG Emergency schedules: F-C, S-V

Ensure there is adequate ventilation





Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

Compliance with applicable regulations.

Before transporting product containers :

- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

Avoid transport on vehicles where the load space is not separated from the driver's compartment.

#### **14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:**

Not applicable

### **SECTION 15. REGULATORY INFORMATION**

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

Reg. (CE) n. 1907/2006 (REACH), Reg. (CE) n. 1272/2008 (CLP), Reg. (UE) n. 2015/830, Reg. (UE) n. 2020/878.

#### **15.2. Chemical Safety Assessment:**

yes

### **SECTION 16. OTHER INFORMATION**

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Revised safety data sheet in accordance with commission regulation 878/2020.

Points that have changed since the previous version are highlighted with a vertical line in the body of this document.

Ensure operators understand the flammability hazard.

Users of breathing apparatus must be trained.

Ensure operators understand the toxicity hazard.

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECHA: European chemical agency

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

CCNL - Appendix 1

EIGA

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD. The SDS cancels and replaces any preceding release.

ADR:	European Agreement concerning the International Carriage of Dangerous Goods by Road.
CAS:	Chemical Abstracts Service (division of the American Chemical Society).
CLP:	Classification, Labeling, Packaging..
DNEL:	Derived No Effect Level.
EINECS:	European Inventory of Existing Commercial Chemical Substances.
GHS:	Globally Harmonized System of Classification and Labeling of Chemicals.
IATA:	International Air Transport Association.



# TAZZETTI

IATA-DGR:	Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO:	International Civil Aviation Organization.
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO).
IMDG:	International Maritime Code for Dangerous Goods.
LC50:	Lethal concentration, for 50 percent of test population.
LD50:	Lethal dose, for 50 percent of test population.
LTE:	Long-term exposure.
PNEC:	Predicted No Effect Concentration.
RID:	Regulation Concerning the International Transport of Dangerous Goods by Rail.
STE:	Short-term exposure.
STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.
TWATLV:	Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).