



## SAFETY DATA SHEET (SDS)

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

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#### 1.1. Product Identifier

Mixture identification:

Name: R515B

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

Recommended use:

Industrial and professional

Refrigerant gas

#### 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. +39 011 97021

Fax +39 011 9702460

[rsg.inquiry@tazzetti.com](mailto:rsg.inquiry@tazzetti.com)

#### 1.4. Emergency telephone number

Italy +39

02 66101029 - Centro antiveneni ospedale Niguarda di Milano

800883300 – Azienda Ospedaliera Papa Giovanni XXII di Bergamo

055 7947819 – Azienda Ospedaliera "Carreggi" U.O. Tossicologia Medica di Firenze

800183459 - Azienda Ospedaliera Univ. Foggia di Foggia

081 5453333 - Azienda Ospedaliera "A. Cardarelli" di Napoli

0382 24444 - CAV Centro Nazionale di Informazione Tossicologica di Pavia

06 68593726 – CAVp "Osp. Pediatrico Bambino Gesù" di Roma

06 49978000 – CAV Policlinico "Umberto I" di Roma

06 3054643 – CAV Policlinico "A. Gemelli" di Roma

800011858 - Azienda Ospedaliera Integrata di Verona

### 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

Results of PBT and vPvB assessment, see Chapter 12.5.

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 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

Not available

### 3.2. Mixtures

Component	No. Reg. REACH	CAS No.	EC No.	% (w/w)	Classific. CLP
Trans-1,3,3,3-tetrafluoroprop-1-ene	01-0000019758-54-0000	29118-24-9	471-480-0	91.1	H280 Press. Gas
1,1,1,2,3,3,3-heptafluoropropane	01-2119485489-18 -0000	431-89-0	207-079-2	8.9	H280 Press. Gas

## SECTION 4. FIRST AID MEASURES

### 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

Treatment:

See Section 11 for more detailed information on health effects and symptoms



## 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

Contents under pressure. Heat causes pressure increase with danger of bursting Cool closed containers near flames with water spray.

Not combustible under normal conditions. However, this material may ignite where mixed with pressurized air and exposed to strong sources of combustion.

Do not allow extinguishing media to enter drains or waterways.

Vapors are heavier than air and can cause suffocation by reducing the oxygen available for breathing.

Particular hazards from corrosive, toxic fuels and decomposition products.

Combustion can result in fumes of: Hydrofluoric acid Carbon oxides Carbonyl halides Halogenated components.

### 5.3. Advice for fire-fighters

Wear full protective clothing and self-contained breathing apparatus.

Inhalation of decomposition products can cause health damage.

Use extinguishing systems compatible with the local situation and surroundings.

In case of fire, cool the containers with water jets.

## 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.

## 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:

See paragraph 10 below.

Instructions as regards storage permits:

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

Occupational exposure limits

Components

Trans-1,3,3,3-tetrafluoroprop-1-ene: 800 ppm

DNEL Value

Trans-1,3,3,3-tetrafluoroprop-1-ene: Workers / Long-term systemic effects: 3902 mg / m<sup>3</sup> (inhalation)

Trans-1,3,3,3-tetrafluoroprop-1-ene: Consumer / Long-term systemic effects: 830 mg / m<sup>3</sup> (inhalation)

1,1,1,2,3,3,3-heptafluoropropane: Workers / Long-term systemic effects: 61279 mg / m<sup>3</sup> (inhalation)

1,1,1,2,3,3,3-heptafluoropropane: Consumer / Long-term systemic effects: 6533 mg / m<sup>3</sup> (inhalation)

PNEC Value

Component (Environmental Compartment/Value Remarks)

trans-1,3,3,3-Tetrafluoroprop-1-ene Fresh water: 0.1 mg/l Assessment factor: 1000

1,1,1,2,3,3,3-heptafluoropropane Fresh water: 0.1 mg/l Assessment factor: 1000

1,1,1,2,3,3,3-heptafluoropropane Sewage treatment plant: 1.73 mg/l Assessment factor: 100

1,1,1,2,3,3,3-heptafluoropropane Freshwater sediment: 1.3 mg/kg dw

### 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. Please observe section 13 (Waste treatment methods).

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

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

Appearance:	Gas
Colour:	Incolour
Odour:	Ethereal
Odour threshold:	Information not available
pH:	Not applicable to substance
Melting point / freezing point:	Information not available
Initial boiling point and boiling range:	Information not available
Solid/gas flammability:	Not applicable to substance
Upper/lower flammability or explosive limits:	Not applicable to substance
Vapour density:	Information not available
Flash point:	Not applicable to substance
Evaporation rate:	Information not available
Vapour pressure:	440 kPa (21 °C)
Density:	Information not available
Solubility in water:	Not soluble
Solubility (in other substances):	Alcohols, chlorinated solvents, esthers
Partition coefficient n-octanol/water (POW):	Not tested
Auto-ignition temperature:	Not applicable to substance
Decomposition temperature:	Hazardous decomposition products in case of fire. To avoid thermal decomposition, do not overheat
Viscosity:	Information not available
Explosive properties:	Not applicable to substance
Oxidizing properties:	Not applicable to substance

### 9.2. Other information

No data available

## SECTION 10. STABILITY AND REACTIVITY

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### 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

Pressure vessel.

Protect against sunlight and do not expose to a temperature above 50 °C.

Can form a combustible mixture with air at pressures above atmospheric pressure.

## 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

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

Acute oral toxicity: Not applicable. technically not feasible study Acute dermal toxicity: no data available. technically not feasible study Acute inhalation toxicity:

CL0 Species: Rat Value:> 207000 ppm Exposure time: 4 h Method: OECD TG 403 Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

CL50 Species: Rat Value:> 241000 ppm Exposure time: 4 h Test substance: 1,1,1,2,3,3,3-Heptafluoropropane (HFC-227ea)

Irritating to skin: Species: Rabbit Result: No skin irritation Method: OECD TG 404 Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

Irritating to eyes: no data available, technically not feasible study

Respiratory or skin sensitization: Species: Human Result: Does not cause skin sensitization. Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

Repeated dose toxicity: Species: Rat Method of application: Inhalation Exposure time: 90 d NOEL: 5000 ppm Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene Method: OECD TG 413 Note: Subchronic toxicity

Carcinogenicity: Note: no data available

Germ cell mutagenicity: Test method: Chromosomal aberration in vitro Cell type: Human lymphocytes Result: negative Method: OECD TG 473 Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene Test method: Ames test Result: negative Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene Test method: Mutagenicity (mammals: bone marrow - in vivo cytogenetic assay - chromosome analysis) Species: Mouse Cell type: Micronucleus Method of application: Inhalation Method: OECD TG 474 Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene Result: negative Species: Rabbit Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene Method: OECD 416 Note: Did not show teratogenic effects in animal experiments. Species: Rat Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene Method: OECD 416 Note: Did not show teratogenic effects in animal experiments.

Reproductive toxicity: Test Type: Two-generation study Method: OECD TG 416 Species: Rat Application progress: Inhalation General Parental Toxicity: NOEL:> 20,000 ppm General toxicity F1: NOEL:> 20,000 ppm Remarks: trans-1,3,3,3-Tetrafluoroprop-1-ene Method:

OECD TG 414 Species: Rat Application progress: Inhalation General toxicity in mothers: NOEC: 15,000 ppm Developmental Toxicity: NOAEC: 15,000 ppm Remarks: trans-1,3,3,3-Tetrafluoroprop-1-ene

Aspiration hazard: no data available

Other information: Cardiac sensitization (dog): no effect

#### **11.2. Information on other hazards.**

Endocrine-disrupting properties: no data available.

Other information: Cardiac sensitization (dog): no effect.

## **SECTION 12. ECOLOGICAL INFORMATION**

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### **12.1. Toxicity**

Toxicity to fish: CL0 Static test, Species: Cyprinus carpio (Carp) Value:> 117 mg / l Exposure time: 96 h  
Method: OECD TG 203 Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

Toxicity to aquatic plants: NOEC Growth speed Species: Algae Value:> 170 mg / l Exposure time: 72 h  
Method: OECD Test Guideline 201

Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

NOEC Biomass Species: Algae Value:> 170 mg / l Exposure time: 72 h Method: OECD Test Guideline 201  
Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

Toxicity to aquatic invertebrates: CE50 Static test Species: Daphnia magna (Large water flea) Value:> 160 mg / l Exposure time: 48 h Method: OECD Test Guideline 202 Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

### **12.2. Persistence and degradability**

Biodegradability: aerobic Result: Not readily biodegradable. Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

### **12.3. Bioaccumulative potential**

Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene Bioconcentration is not expected (log of octanol / water partition coefficient <= 4)

### **12.4. Mobility in soil**

No data available

### **12.5. Results of PBT and vPvB assessment**

vPvB Substances: None - PBT Substances: None

### **12.6. Endocrine-disrupting properties**

No available data

### **12.7 Other adverse effects**

No available data

## **SECTION 13. DISPOSAL CONSIDERATIONS**

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### **13.1. Waste treatment methods**

Product: Dispose of according to legal requirements.

Packaging: Comply with legal requirements regarding reuse or disposal and treatment of used packaging.

## **SECTION 14. TRANSPORT INFORMATION**

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### **14.1. UN number**

ADR/RID/IMDG/IATA - UN number: 3163





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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: LIQUEFIED GAS N.O.S.

IATA-Technical name: LIQUEFIED GAS N.O.S.

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- Packing Group: -

#### 14.5. Environmental hazards: No

#### 14.6. Special Precautions for User

ADR-Tunnel restriction code: C/E

IMDG Stowage and segregation: Cat. A

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

D.Lgs. 81/2008; Reg. (CE) n. 1907/2006 (REACH), Reg. (CE) n. 1272/2008 (CLP), Reg. (UE) n. 2015/830, Reg. (UE) 2020/878.

#### 15.2. Chemical Safety Assessment

yes

### SECTION 16. OTHER INFORMATION

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Safety Data Sheet revised in accordance with EU Regulation 2020/878.

Points that have changed from 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 MSDS 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.
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).