TAZZETTI

SAFETY DATA SHEET (SDS)

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

1.1. Product identifier
Identification of the substance:
Name: R454B
UFI code: SF5P-0TY1-600W-AAC9

1.2. Relevant identified uses of the substance/mixture and uses advised against
Recommended use:
Industrial and professional
Refrigerant and 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. +39 011 97021
Fax +39 011 9702460
rsg.inquiry@tazzetti.com

1.4. Emergency telephone number
+44 20 3885 0382 (CHEMTREC)
+1-703-527-3887 (CHEMTREC)

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture
EC regulation criteria 1272/2008 (CLP):
Warning, Flam. Gas 1B, Flammable gas.
Warning, Press. Gas, Contains gas under pressure.

2.2. Label elements
Symbols:

Signal word: Danger
Hazard statements:
H221 Flammable gas
H280 Contains gas under pressure; may explode if heated.
Precautionary statements:
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P377 Leaking gas fire: do not extinguish, unless leak can be stopped safely.
P381Eliminate all ignition sources if safe to do so
P410+403: Protect from sunlight. Store in a well ventilated place
Special Provisions:
Contains fluorinated greenhouse gases.

2.3. Other Hazards

This substance/mixture does not contain components considered to be both persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at concentrations of 0.1% or higher. ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Vapors are heavier than air and can cause suffocation by reducing the oxygen available for breathing.
Inappropriate use or abuse by intentional inhalation can result in death without premonitory symptoms, due to cardiac damage.
Rapid evaporation of the product can cause frostbite.
May reduce available oxygen and cause suffocation rapidly.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Identification of the substance:
Not applicable

3.2. Mixtures

Hazard component	No. Reg. REACH	CAS No.	EC No.	% (w/w)	Classific. CLP
Difluoromethane	01-2119471312-47-0022	75-10-5	200-839-4	68.9	H221 Flam. Gas 1B H280 Press. Gas
2,3,3,3-Tetrafluoropropene	01-0000019665-61-0000	754-12-1	468-710-7	31.1	H221 Flam. Gas 1B H280 Press. Gas

SECTION 4. FIRST AID MEASURES

4.1. Description of first aid measures

In case of skin contact:
In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
Take off all contaminated clothing immediately.
In case of eyes contact:
In case of contact with eyes, rinse immediately (for at least 15 minutes) with plenty of water and seek medical advice.
In case of ingestion:
Obtain medical assistance.
In case of 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

Inhalation of high concentration may cause central nervous system depression resulting in dizziness, weakness, nausea, headache and possibly unconsciousness. Anaesthetic effects, light-headedness, confusion, incoordination drowsiness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness.

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

Treatment: Because of possible heart rhythm disturbances, catecholamine-type drugs, such as epinephrine, which can be used in emergency situations as life support, should be used with special care.

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SECTION 5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media
Suitable extinguishing media:
CO2 or dry chemical fire extinguishe.
Extinguishing media which must not be used for safety reasons:
None in particular. Do not use direct water jets on the burning product as they may cause a steam explosion and spread of the fire.

5.2. Special hazards arising from the substance or mixture
Containers may explode if heated
Do not inhale explosion and combustion gases. Hazardous thermal decomposition products: carbon oxides, CO_X and incompletely burned hydrocarbons.
The vapor is heavier than air, spreads along the ground and distant ignition is possible. Sustained fire attack on vessels may lead to an explosion of boiling liquid expanding vapor and (BLEVE).

5.3. Advice for fire-fighters
Special protective equipment for firefighters : If necessary, wear self-contained breathing apparatus to extinguish the fire. Use personal protective equipment.
Specific extinguishing methods : Use extinguishing systems compatible with the local situation and surroundings.
Water sprays can be used to cool closed containers. In case of fire due to gas leakage, do not extinguish unless the leakage can be stopped without danger. Remove intact containers from the fire area if this can be done safely. Evacuate the area.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Provide adequate ventilation.
Remove all sources of ignition.
Evacuate area.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Wear breathing apparatus if exposed to vapours/dusts/aerosols.
See protective measures under point 7 and 8.

6.2. Environmental precautions
Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

6.3. Methods and materials for containment and cleaning up
Reduce vapour with fog or fine water spray.
Provide containment for water used
Ventilate area

6.4. Reference to other sections
See also section 8 and 13

SECTION 7. HANDLING AND STORAGE

7.1. Precautions for safe handling
Do not allow backfeed into the container.
Use only equipment suitable for the product and the operating pressure

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Take precautionary measures against static discharge.
Keep away from ignition sources (including static discharges).
Avoid contact with skin and eyes, inhalation of vapours and mists.
Use localized ventilation system.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contaminated clothing should be changed before entering eating areas.
Do not eat or drink while working.
Do not smoke while working.
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.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.
Never use direct flame to raise the pressure of a container.
See also section 8 for recomened protective equipment.
Purge air from system before introducing gas.
Ensure the complete gas system was (or is regularily) checked for leaks before use.
Assess the risk of potentially explosive atmosphere and the need for explosion-proof equipment.
Consider the use only non-sparking tools.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
Warnings for safe use : Avoid breathing the gases. Handle in accordance with good industrial hygiene and safety practices, based on the results of the workplace exposure assessment. Keep container tightly closed. Use thermal gloves/face shield/ Protect eyes. Use a check valve in order to prevent backflow into the canister. Prevent recirculation in the gas tank. Use a reducer regulator when connecting pressure cylinder to lower pressure (< 3000 psig) piping or systems. Close the valve after each use and when the package is empty. DO NOT replace or forcibly insert fittings. Prevent water seepage into the gas tank. Never attempt to turn the cylinder by picking it up by the lid. Do not drag, slide or roll cylinders.

7.2. Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers.
All electrical equipment in the storage areas should be compatible with the risk of potentially explosive atmosphere.
Keep container below 50°C in a well ventilated area.
Keep away from ignition sources (including static discharges).
Do not store near oxidizing containers.
Always keep in a well ventilated place.
Keep away from unguarded flame, sparks, and heat sources.
Keep away from food, drink and feed.
Segregate from oxidant gases and other oxidants in store.
Incompatible materials:
Some types of cast iron. Examples of materials to avoid: ABS, polymethyl methacrylate (PMMA), polyethylene (PE/HDPE), polypropylene (PP), PVC, natural rubber (NR), nitrile (NBR), ethylene-propylene rubber (EPDM), butyl (IIR), Hypalon (CSM), polystyrene, polyvinyl chloride (PVC), polyisobutylene. For containers and their liners, do not use aluminum if there is a risk of caustic substance contamination of the product.
See also section 10 below.
Instruction as regards storage premises:
Adequately ventilated.
Containers should not be stored in conditions likely to encourage corrosion.

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7.3. Specific end use(s)
If annexed, please make reference to the scenario

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters
Difluoromethane: Long Term Exposure Limit (LTEL): 8 h, TWA 1000 ppm
2,3,3,3-Tetrafluoropropene VLEP: N.D.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006: Substance name: Difluoromethane End use:
Workers Route of exposure Inhalation Potential health consequences Long-term systemic effects Value 7035 mg/m³
Consumers Route of exposure Inhalation Potential health consequences Long-term systemic effects Value 750 mg/m³
2,3,3,3- Tetrafluoropropene End use:
Workers Route of exposure Inhalation Potential health consequences Long-term systemic effects Value 950 mg/m³

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006: Substance name: Difluoromethane
Environmental compartment Fresh water Value 0.142 mg/l
Discontinuous use/release 1.42 mg/l
Freshwater sediment 0.534 mg/kg dry weight (dry weight)
2,3,3,3-Tetrafluoropropene Freshwater 0.1 mg/l
Discontinuous use/release 1 mg/l
Freshwater sediment 1.77 mg/kg dry weight (dry weight)
Soil 1.54 mg/kg dry weight (dry weight)
Seawater 0.01 mg/l
Marine sediment 0.178 mg/kg dry weight (dry weight)

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.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:	Gas
Colour:	Incolour
Odour:	Ether
pH:	Not applicable to substance
Melting point / freezing point:	Not available
Initial boiling point and boiling range:	-50.9 °C
Solid/gas flammability:	flammable
Upper/lower flammability or explosive limits:	11.25% - 22%
Vapour density:	15.856 hPa (25 °C)
Relative vapour density:	2,2 (Air = 1)
Flash point:	Not available
Evaporation rate:	> 1 (CCL4=1.0)
Vapor pressure:	15.856 hPa (25 °C)
Density:	0.98 g/cm^3 (25°C)
Solubility in water:	Not available
Partition coefficient (n-octanol/water):	Not available
Autoignition temperature:	> 800 °C
Self-ignition temperature:	496 °C
Decomposition temperature:	Not available
Viscosity:	Not available
Explosive properties:	Non-explosive
Oxidising properties:	The substance or mixture is not classified as an oxidant.

9.2. Other informations

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity

Hazardous polymerisation does not occur.

10.2. Chemical stability

Stable.

10.3. Possibility of hazardous reactions

Vapours may form flammable mixture with air.
May react violently with oxidants.

10.4. Conditions to avoid

Keep away from heat / sparks / open flames / hot surfaces - No smoking.
Avoid the accumulation of electrostatic charges.

10.5. Incompatible materials

Materials to avoid: avoid impurities (e.g., rust, dust, ash): risk of decomposition! Incompatible with acids and bases. Incompatible with oxidizing agents. Oxygen Peroxide compounds Powdered metals.

10.6. Hazardous decomposition products

In case of fire and explosion of the container can form organic compounds not completely combusted as carbon monoxide

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SECTION 11. TOXICOLOGICAL INFORMATION

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

Information on likely routes of exposure : Inhalation Skin contact Eye contact Acute toxicity

Not classifiable based on available information.

Components:

Difluoromethane:

Acute oral toxicity : Evaluation: The substance or mixture does not exhibit acute oral toxicity Acute inhalation toxicity : LC50 (Rat): > 520000 ppm Exposure time: 4 h Test atmosphere: gas Method: OECD Test Guideline 403.

Concentration with no observed adverse effect (Dog): 350000 ppm Test atmosphere: gas Remarks: Cardiac sensitization

Concentration with observed disadvantageous effect (Dog): > 350000 ppm Test atmosphere: gas Remarks: Cardiac sensitization

Cardiac sensitization threshold limit values (Dog): > 735,000 mg/m³ Test atmosphere: gas Remarks: Cardiac sensitization

Acute dermal toxicity : Assessment: The substance or mixture has no acute dermal toxicity

2,3,3,3-Tetrafluoropropene:

Acute inhalation toxicity : LC50 (Rat): > 405800 ppm Exposure time: 4 h Test atmosphere: gas Method: OECD Test Guideline 403.

Concentration with no observed adverse effect (Dog): 120000 ppm Test atmosphere: gas Remarks: Cardiac sensitization

Concentration with observed disadvantageous effect (Dog): > 120000 ppm Skin corrosion/irritation: No known effects from this product Test atmosphere: gas Remarks: Cardiac sensitization

Cardiac sensitization threshold limits (Dog): > 559,509 mg/m³ Test atmosphere: gas Remarks: Cardiac sensitization

Skin corrosion/irritation Not classifiable based on available information.

Components:

Difluoromethane: Result : No skin irritation.

2,3,3,3-Tetrafluoropropene: Result : No skin irritation

Serious eye injury/serious eye irritation Not classifiable based on available information. Components: Difluoromethane: Result : No eye irritation.

2,3,3,3-Tetrafluoropropene: Result : No eye irritation

Respiratory or skin sensitization

Skin sensitization Not classifiable based on available information.

Respiratory sensitization Not classifiable based on available information.

Components:

Difluoromethane: Route of exposure : Skin contact Result : negative

Route of exposure : Inhalation Result : negative

2,3,3,3-Tetrafluoropropene: Route of exposure : Skin contact Result : negative

Germ cell mutagenicity Not classifiable based on available information.

Components: Difluoromethane: In vitro genotoxicity : Test type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative

Test type: in vitro chromosome aberration Method: OECD Test Guideline 473 Result: negative

In vivo genotoxicity : Test type: Micronucleus assay in mammalian erythrocytes (in vivo cytogenetic assay) Species: Mouse Mode of application: inhalation (gas) Method: OECD Test Guideline 474 Result: negative

Germ cell mutagenicity-Evaluation : Evidence does not support classification as a germ cell mutagen.

2,3,3,3-Tetrafluoropropene: In vitro genotoxicity :

Test type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: positive

Test type: in vitro chromosome aberration Method: OECD Test Guideline 473 Result: negative

In vivo genotoxicity :

Test type: Micronucleus assay in mammalian erythrocytes (in vivo cytogenetic assay) Species: Mouse Mode of application: inhalation (gas) Method: OECD Test Guideline 474 Result: negative

Test type: mammalian alkaline comet assay in vivo Species: Rat Mode of application: inhalation (gas) Method: OECD Test Guideline 489 Result: negative Test type: Micronucleus assay in mammalian erythrocytes (in vivo cytogenetic assay) Species: Rat Mode of application: inhalation (gas) Method: 474 Guidelines for the OECD Test Result: negative Cell mutagenicity : Evidence does not support classification as a germ cell mutagen.

Carcinogenicity Not classifiable based on available information. Components:

Difluoromethane: Carcinogenicity - Evaluation : The evidence does not support a classification as a carcinogen 2,3,3,3-Tetrafluoropropene: Result : negative Carcinogenicity - Evaluation : The evidence does not support a classification as a carcinogen

Reproductive toxicity Not classifiable based on available information.

Components: Difluoromethane : Effects on fertility : Species: Mouse Mode of application: Inhalation Result: negative Remarks: Based on data from similar materials.

Effects on fetal development : Test type: Repeated dose toxicity study combined with reproduction/developmental toxicity screening test Species: Rat Mode of application: inhalation (gas) Method: OECD Test Guideline 414 Result: negative

Test type: Repeated dose toxicity study combined with reproduction/development toxicity screening test Species: On rabbit Mode of application: inhalation (gas) Method: Guideline 414 for OECD Test Result: negative

Reproductive toxicity - Evaluation : Evidence does not support a classification for reproductive toxicity 2,3,3,3-Tetrafluoropropene: Effects on fertility : Test type: Two-generation reproductive toxicity study Species: Rat Mode of application: inhalation (gas) Method: OECD Test Guideline 416 Result: negative

Effects on fetal development : Test type: Prenatal developmental toxicity study (teratogenicity) Species: Rat Mode of application: inhalation (gas) Method: OECD Test Guideline 414 Result: negative

Reproductive toxicity - Assessment : Evidence does not support a classification for reproductive toxicity, No effect on or via lactation

Specific target organ toxicity (STOT) - single exposure Not classifiable based on available information.

Components: Difluoromethane: Route of exposure : inhalation (gas) Evaluation : No significant health effects observed in animals at concentrations of 20000 ppmV/4h or lower 2,3,3,3-Tetrafluoropropene: Route of exposure : inhalation (gas) Evaluation : No significant health effects observed in animals at concentrations of 20000 ppmV/4h or lower

Specific target organ toxicity (STOT) - repeated exposure Not classifiable based on available information.

Components: Difluoromethane: Route of exposure : inhalation (gas) Evaluation : No significant health effects observed in animals at concentrations of 250 ppmV/6h/g or lower.

2,3,3,3-Tetrafluoropropene: Route of exposure : inhalation (gas) Evaluation : No significant health effects observed in animals at concentrations of 250 ppmV/6h/g or lower.

Repeated dose toxicity

Components: Difluoromethane : Species : Rat, male and female NOAEL : 49100 ppm LOAEL : > 49100 ppm Mode of application : inhalation (gas) Exposure time : 13 Sep. Method : OECD Test Guideline 413.

2,3,3,3-Tetrafluoropropene: Species : Rat, male and female NOAEL : 50000 ppm LOAEL : >50000 ppm Application mode : inhalation (gas) Exposure time : 13 Sep. Method : OECD Test Guideline 413.

Aspiration toxicity Not classifiable based on available information.

Components: Difluoromethane: There is no classification for toxicity by aspiration

2,3,3,3-Tetrafluoropropene: There is no classification for toxicity by aspiration

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11.2 Information on other hazards

Endocrine-disrupting properties Product: Assessment : The substance/mixture does not contain components considered to have endocrine-disrupting properties in accordance with Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity

Components:
Difluorometano: Tossicità per i pesci : CL50 (Pesce): 1.507 mg/l Tempo di esposizione: 96 h Metodo: ECOSAR (Ecological Structure Activity Relationships)
Tossicità per la dafnia e per altri invertebrati acquatici : CE50 (Daphnia (pulce d'acqua)): 652 mg/l Tempo di esposizione: 48 h Metodo: ECOSAR (Ecological Structure Activity Relationships)
Tossicità per le alghe/piante acquatiche : CE50 (alghe verdi): 142 mg/l Tempo di esposizione: 96 h Metodo: ECOSAR (Ecological Structure Activity Relation2,3,3,3-Tetrafluoropropene:
Tossicità per i pesci: CL50/96h/pesce (Cyprinus carpio - Carpa): > 197 mg/l
Tossicità per le piante acquatiche: CE50/72h/alga: > 100 mg/l
Tossicità per gli invertebrati acquatici: CE50/48h/dafnia magna: > 100 mg/l
Tossicità per le alghe/piante acquatiche : CE50 (alghe verdi): 142 mg/l Tempo di esposizione: 96 h Metodo: ECOSAR (Ecological Structure Activity Relation-ships)
2,3,3,3-Tetrafluoropropene: Tossicità per i pesci : CL50 (Cyprinus carpio (Carpa)): > 197 mg/l Tempo di esposizione: 96 h Metodo: Linee Guida 203 per il Test dell'OECD
Tossicità per la dafnia e per altri invertebrati acquatici : CE50 [Daphnia magna (Pulce d'acqua grande)]: > 100 mg/l Tempo di esposizione: 48 h Metodo: Linee Guida 202 per il Test dell'OECD
Tossicità per le alghe/piante acquatiche : CE50 (Selenastrum capricornutum (alga verde)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Selenastrum capricornutum (green algae)): > 75 mg/l Exposure time: 3 d Method: OECD Test Guideline 201

12.2. Persistence and degradability

Components: Difluoromethane: Biodegradability : Result: Not readily biodegradable. Method: OECD Test Guideline 301D.
2,3,3,3-Tetrafluoropropene: Biodegradability : Result: Not readily biodegradable. Method: 301F Guidelines for the Test of the OECD.

12.3. Bioaccumulative potential

Components:
Difluoromethane: Partition coefficient: nottanol/water : log Pow: 0.714 2,3,3,3-Tetrafluoropropene: Bioaccumulation : Remarks: Bioaccumulation is unlikely. Partition coefficient: nottanol/water : log Pow: 2 (25 °C)

12.4. Mobility in soil: not available

12.5. Results of PBT and vPvB assessment

Assessment : This substance/mixture contains no components considered either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at concentrations of 0.1% or higher.

12.6. Endocrine-disrupting properties

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Product: Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects
Fluorinated greenhouse gases with Global Warming Potential Regulation UE n. 573/2024 GWP 465.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
Product : Dispose in accordance with the relevant regulations. According to the European Waste Catalogue, waste codes are not product-specific, but application-specific. Waste codes should be assigned by the user, preferably after discussion with the authorities responsible for waste disposal.
Contaminated containers : Empty containers should be transported to an approved site for recycling or disposal. Depressurized containers should be returned to the supplier. Empty containers retain residue and can be hazardous. Do not pressurize, cut, weld, braze, drill, grind or expose such containers to heat, flames, sparks or other sources of ignition. These may explode and cause injury and/or death. Dispose of as unused product unless otherwise specified.

SECTION 14. TRANSPORT INFORMATIONS

14.1. UN Number
ONU ADR/RID/IMDG/IATA -Number: 3161

14.2. UN proper shipping name
ADR/RID/IMDG - shipping name: LIQUEFIED GAS FLAMMABLE N.O.S.
IATA Technical name: LIQUEFIED GAS FLAMMABLE N.O.S.

14.3. Transport hazard class(es)
ADR/RID - Class: 2
ADR - Label: 2.1
RID - Labe: 2.1 (+13)
ADR/RID - Hazard identification number: 23
Classification code: 2F
IMDG - Class: 2.1
IATA (Cargo) : 2.1
IATA (Passenger) : Not permitted for transport

14.4. Packing group
ADN Packing group : Not assigned by regulation
Classification Code : 2F
Hazard Identification Number : 23
Labels : 2.1
ADR Packing group : Not assigned by regulation
Classification Code : 2F
Hazard Identification Number : 23
Labels : 2.1
Tunnel restriction code : (B/D)
RID Packing group : Not assigned by regulation
Classification Code : 2F
Hazard Identification Number : 23
Labels : 2.1 ((13)) IMDG
Packing group : Not assigned by regulation
Labels : 2.1
EmS Code : F-D, S-U

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IATA (Cargo) Packing instruction (cargo aircraft) : 200
Packing group : Not assigned by regulation
Labels : Flammable Gas
IATA (Passenger) : Not permitted for transport

14.5. Environmental hazards: No

14.6. Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet.
Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulation

14.7. Transport in bulk according to annex II of MARPOL 73/78 and the IBC code: N.A.

SECTION 15. REGULATORY INFORMATION

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 Reg. (UE) n. 573/2024.
Where applicable, refer to the following regulatory provisions :
Directive 2003/105/CE ('Activities linked to risks of serious accidents') and subsequent amendments.
1999/13/EC (VOC directive)

15.2. Chemical safety assessment: yes

SECTION 16. OTHER INFORMATION

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:
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 (divisione della American Chemical Society).
CLP:	Classification, Labeling, Packaging.
DNEL:	Derived No Effect Level.
EINECS:	European Inventory of Existing Commercial Chemical Substances.

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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).
N.A.	Not available

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