

MATERIAL SAFETY DATA SHEET


Product Name: R-507A

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| 1 - IDENTIFICATION | |
|---|---|
| Product name (comercial name): | R-507A |
| Main recommended uses for the substance or mixture: | Refrigerant gas |
| Product code: | 011972 |
| Imported and distributed by: | RLX INDUSTRIAL IMPORTADORA LTDA Av. Abiurana, 450, Bloco C1 CEP: 69075-010 Manaus-AM |
| Contact phone: | (51)3516-9479 |
| Emergency phone: | (11)2085-4622 |

| 2 - HAZARDS IDENTIFICATION | |
|---|--|
| Hazard classification of the chemical: | Gases under pressure, compressed gas, H280 |
| Classification system used: | The classification of this product was carried out in accordance with standard NBR14725-2. |
| Other hazards that do not result in classification: | Not applicable |
| Appropriate labeling elements | |
| Pictograms: |  |
| Warning word: | ATTENTION |



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| Hazard statements: | H280: Contains gas under pressure: may explode under the action of heat. |
| Precautionary statements: | P410 + P403: Keep out of sunlight. Store in a well-ventilated place. |

3 - COMPOSITION AND INFORMATION ABOUT INGREDIENTS

SUBSTANCE

| | |
|---|----------------|
| Common chemical name or technical name: | Not applicable |
| Synonym: | Not applicable |
| CAS registration number: | Not applicable |
| Concentration | Not applicable |
| Impurities that contribute to danger: | Not applicable |

3 - COMPOSITION AND INFORMATION ABOUT INGREDIENTS

MIXTURE

| | Components | Concentration (%) | CAS N° |
|--|-------------------------|--------------------------|---------------|
| Ingredients or impurities that contribute to the hazard: | 1,1,1 – TRIFLUOROETHANE | 50% | 420-46-2 |
| | PENTAFLUOROETHANE | 50% | 354-33-6 |

4 - FIRST AID ACTIONS

| | |
|---------------|--|
| Inhalation: | In the case of intoxication symptoms, it is recommended to remove the affected person from the exposure site and provide fresh air. Request medical attention if symptoms worsen or persist. |
| Skin contact: | Remove contaminated clothing and shoes, clean the skin or wash the affected area with plenty of cold water and mild soap. In case of |



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| | serious illness consult a doctor. If the product causes burns or frostbite, clothing should not be removed as it may aggravate the injury if it is stuck to the skin. If blisters form on the skin, they should not burst as it would increase the risk of infection. |
| Eye contact: | Rinse eyes with plenty of water at room temperature for at least 15 minutes. Prevent the affected person from rubbing or closing his eyes. If affected, wear contact lenses, they must be removed whenever they are not glued to the eyes, otherwise it could cause additional damage. In all cases, after washing, consult a doctor as soon as possible with the product's SDS. |
| Ingestion: | As this product is a gas, see inhalation recommendations. |
| Most important symptoms and effects, acute or delayed: | The acute and delayed effects are indicated in points 2 and 11, when applicable. |
| Notes to doctor: | Not applicable. |

5 - FIRE-FIGHTING MEASURES

| | |
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| Extinguishing media: | Preferably use polyvalent powder extinguishers (ABC powder), alternatively use physical foam or carbon dioxide (CO2) extinguishers. IT IS NOT RECOMMENDED to use water jet as an extinguishing agent. |
| Specific hazards of the mixture or substance: | As a consequence of combustion or thermal decomposition, reaction by-products are generated that can be highly toxic and, consequently, can present a high health risk. |
| Fire protection team protection measures: | Depending on the magnitude of the fire, the use of full protective clothing and self-contained breathing apparatus may be required. Have a minimum of emergency facilities or operating elements (fireproof blankets, portable pharmacy, etc.). Acting in accordance with the Internal Emergency Plan and Information Sheets on the performance of accidents and other emergencies. Suppress any source of ignition. In the event of fire, refrigerate the containers and storage tanks for products susceptible to ignition, explosion as a result of high temperatures. Avoid spilling the products used to extinguish the fire in |



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| | |
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| | the aquatic environment. |
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6- CONTROL MEASURES FOR SPILL OR LEAKAGE

| Personal precautions | |
|---|---|
| For personnel who are not part of the emergency services: | Not applicable |
| For emergency service personnel: | Isolate leaks whenever they do not pose an additional risk to persons performing this function. Evacuate the area and keep unprotected people away. In view of the potential contact with the spilled product, the use of personal protection elements is mandatory (see item 8). Avoid the formation of flammable vapor-air mixtures as a matter of priority, either through ventilation or using a stabilizing agent (inerting). Suppress any source of ignition. Eliminate electrostatic charges through the interconnection of all conductive surfaces on which static electricity can form and, in turn, the set connected to earth. |
| Environmental precautions: | Product not classified as dangerous for the environment. Keep away from sewers, surface and ground water. |
| Methods and materials for containment and cleaning: | It is recommended to absorb the spill through sand or inert absorbent and move it to a safe place. Do not absorb with sawdust or other combustible absorbents. For any consideration regarding disposal, see item 13. |
| Differences in the action of large and small leaks: | Not applicable |



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7- HANDLING AND STORAGE

Appropriate technical measures for handling

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| Precautions for safe handling: | Comply with current legislation on the prevention of occupational risks. Keep containers tightly closed. Control spills and waste, eliminating them with safe methods. Avoid spillage from the container. |
| Hygiene measures: | Maintain order and cleanliness where dangerous products are handled. |

Conditions for safe storage, including any incompatibilities

| | |
|--------------------------------|---|
| Fire and explosion prevention: | Handle in well-ventilated areas, preferably by means of localized extraction. Fully control ignition sources and ventilate during cleaning operations. Avoid the existence of dangerous atmospheres inside containers, using, if possible, inerting systems. Handle at slow speeds to avoid creating electrostatic charges. In view of the possibility of electrostatic charges, ensure a perfect equipotential bond. Always use earth sockets, do not use acrylic fiber work clothes, preferably using cotton clothes and conductive footwear. Comply with the essential safety requirements for equipment and the minimum provisions for the protection of the safety and health of workers under the criteria of choice. |
| Suitable conditions: | Avoid sources of heat, radiation, static electricity and contact with food. |
| Packaging materials: | Not applicable |

8 - EXPOSURE CONTROL AND PERSONAL PROTECTION

Control parameters

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|-------------------------------|---|
| Occupational exposure limits: | Substances whose occupational exposure limit values must be controlled in the work environment (NR15 - Annex number 11, chemical agents whose unhealthiness is characterized by a tolerance limit and inspection in the workplace). |
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MSDS

RLX FLUIDOS REFRIGERANTES

According to NBR 14725-4:2014

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| | |
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| Biological indicators: | Not applicable |
| Other limits and values: | Not applicable |
| Engineering control measures: | Substances whose limit values of exposure are used as a protective measure, the use of basic personal protective equipment is recommended. The information contained in this section refers to the pure product. Protection measures for the diluted product may vary depending on the degree of dilution, use, method of application. To determine compliance with the installation of emergency showers and / or eye washers in warehouses, the relevant regulations, applicable in each case, must be taken into account. All the information presented here is a recommendation, requiring its implementation by the services of prevention of occupational risks when ignoring the additional preventive measures that the company may have. National must be controlled in the work environment (NR15 - Annex number 11 , chemical agents whose unhealthiness is characterized by tolerance and inspection limits in the workplace). |
| Personal protection measures | |
| Eye / face protection: | EYES: Mandatory eye protection. Use panoramic glasses, with side protectors, against splashing liquids. Note: Clean daily and disinfect periodically according to the manufacturer's instructions. |
| Skin and body protection: | HANDS: Mandatory hand protection. Wear gloves to avoid skin contact with the product. Dispose of contaminated gloves after use. BODY: Wear impervious clothing. Protective equipment must be chosen according to the concentration and amount of the hazardous substance in the workplace. FEET: Not applicable. |
| Breath protection: | In cases where the risk assessment shows that air-purifying respirators are appropriate, use a full-face respirator with multi-purpose combination cartridges. |
| Thermal hazards: | Not applicable |



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| 9 - PHYSICAL AND CHEMICAL PROPERTIES | |
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| Aspect (physical state, shape and color): | Gas at ambient temperature, liquefied under pressure |
| Odor and odor limit: | Ethereal odor |
| pH: | Not available |
| Melting point / freezing point: | Not available |
| Initial boiling point and boiling temperature range: | 46,7 °C |
| Flash point: | Not available |
| Evaporation rate: | Not available |
| Flammability (solid, gas): | Not available |
| Lower / upper limit of flammability or explosivity: | Not available |
| Steam pressure: | 153,9 psi (21 °C) 366,8 psi (54 °C) |
| Density: | 1,07 g/m ³ (21,1 °C) |
| Vapor density: | Not available |
| Solubility (ies): | Not available |
| Partition coefficient - n-octanol / water: | Not available |
| Auto-ignition temperature: | Not available |
| Decomposition temperature: | Not available |
| Viscosity: | Not available |
| Other information: | Not available |



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| 10 - STABILITY AND REACTIVITY | |
|--------------------------------------|---|
| Stability and reactivity: | The product is stable under normal conditions of storage and use. |
| Possibility of hazardous reactions: | There will be no hazardous reactions under the recommended storage and transport conditions. |
| Conditions to avoid: | Heat. |
| Incompatible materials: | Do not allow direct contact of the product with chemically active metals: magnesium, alkali. |
| Hazardous decomposition products: | Thermal decomposition produces carbon halide products, halogenated acids, halogens, carbon oxides and carbon monoxides. |

| 11 - TOXICOLOGICAL INFORMATION | |
|---|---|
| Acute toxicity: | Based on the available data, the classification criteria are not met, and there are no substances classified as dangerous for this article. |
| Skin corrosion / irritation: | Based on the available data, the classification criteria are not met, and there are no substances classified as dangerous for this article. |
| Serious eye damage / eye irritation: | Based on the available data, the classification criteria are not met, and there are no substances classified as dangerous for this article. |
| Respiratory or skin sensitization: | Based on the available data, the classification criteria are not met, and there are no substances classified as dangerous for this article. |
| Germ cell mutagenicity: | Based on the available data, the classification criteria are not met, and there are no substances classified as dangerous for this article. |
| Carcinogenicity: | Based on the available data, the classification criteria are not met, and there are no substances classified as dangerous for this article. |
| Reproductive toxicity: | Based on the available data, the classification criteria are not met, and there are no substances classified as dangerous for this article. |
| Specific target organ toxicity - single exposure: | Based on the available data, the classification criteria are not met, and there are no substances classified as dangerous for this article. |
| Specific target organ toxicity | Based on the available data, the classification criteria are not met, and |



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| | |
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| - repeated exposure: | there are no substances classified as dangerous for this article. |
| Aspiration hazard: | Based on the available data, the classification criteria are not met, and there are no substances classified as dangerous for this article. |

12 - ECOLOGICAL INFORMATION

Environmental effects, behavior and product impacts

| | |
|--------------------------------|--|
| Ecotoxicity: | Quantitative data on the acute toxicity of fish / daphnia / bacteria are not available for this product. In view of its density, it tends to disperse initially, moving at a low height. Effects of atmospheric contamination may occur near the source of the leak, but for a short time. |
| Persistence and degradability: | Not available |
| Bioaccumulative potential: | Bioaccumulation is insignificant |
| Mobility in soil: | This substance is volatile. Insoluble in water. |
| Other adverse effects: | Not available |

13 - FINAL DESTINATION CONSIDERATIONS

Recommended methods for final disposal

| | |
|------------------|--|
| Product: | Consult the authorized waste manager for recovery and disposal operations. In case the packaging has been in direct contact with the product, it will be treated in the same way as the product itself, otherwise it will be treated as a non-hazardous waste. It is not advised to leak into water courses. |
| Product remains: | Consult the authorized waste manager for recovery and disposal operations. It is not advised to leak into water courses. |
| Used packaging: | In case the packaging has been in direct contact with the product, it will be treated in the same way as the product itself, otherwise it will |



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be treated as a non-hazardous waste.

14 - TRANSPORT INFORMATION

National and international regulations

| Land: | In application of Resolution No. 5232/2016: |
|------------------------------------|--|
| ONU Number: | UN1078 |
| Proper shipping name: | REFRIGERANT GAS, N.E. |
| Main risk class or subclass: | 2.2 |
| Subsidiary risk class or subclass: | - |
| Risk number: | 20 |
| Packing group: | - |
| Waterway: | In application of IMDG 38-16: |
| ONU Number: | UN1078 |
| Proper shipping name: | REFRIGERANT GAS, N.E. |
| Main risk class or subclass: | 2.2 |
| Subsidiary risk class or subclass: | - |
| Risk number: | 20 |
| Packing group: | - |
| Danger to the environment: | NO |
| Air: | In application of IATA / ICAO: |
| ONU Number: | UN1078 |



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| | |
|--|-----------------------|
| Proper shipping name: | REFRIGERANT GAS, N.E. |
| Main risk class or subclass: | 2.2 |
| Subsidiary risk class or subclass: | - |
| Risk number: | 20 |
| Packing group: | - |
| Specific precautionary measures and conditions: | Not available |
| Additional regulations: | Not available |

15 - REGULATORY INFORMATION

| | |
|---|--|
| Specific regulations for the chemical: | It is recommended to use the information compiled in this MSDS as input data in a risk assessment of local circumstances in order to establish the necessary risk prevention measures for the handling, use, storage and disposal of this product. |
|---|--|

16- OTHER INFORMATION

MSDS prepared in accordance with NBR 14725-4: 2014.

Captions and abbreviations:

(IMDG): International Maritime Code for Dangerous Goods.

(IATA): International Air Transport Association

(ICAO): International Civil Aviation Organization

(COD): Chemical oxygen demand

(BOD5): Biological oxygen demand at 5 days



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(BCF): Bioconcentration factor

(LD50): Lethal dose 50

(LC50): Lethal concentration 50

(EC50): Effective concentration 50

(Log POW): octanol-water partition coefficient logarithm

(Koc): organic carbon partition coefficient

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