



## MATERIAL SAFETY DATA SHEET

CONTACT : **LEONID CHEMICALS**  
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### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:**

R-422A

**DISTRIBUTOR:**

LEONID CHEMICALS

62/A-2 2nd Stage, Industrial Suburb

Yeshwanthpur, Bangalore -22, INDIA

Ph- +91-80-23378354

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

**INGREDIENT NAME**

**CAS NUMBER WEIGHT %**

Pentafluoroethane

354-33-8

85.1%

1,1,1,2-Tetrafluoroethane

**75-88-7**

11.5%

Isobutane

75-28-5

3.4%

### 3. HAZARDS IDENTIFICATION

**POTENTIAL HEALTH HAZARDS:**

Contains a liquefied gas. Contact of liquid may cause frostbite and injury to cornea

May have a narcotic effect at high concentrations.

**PHYSICAL AND CHEMICAL HAZARDS:**

Fire or Explosion - Heating will cause a rise in pressure with a risk of bursting. On combustion, toxic gases are released.

### 4. FIRST AID MEASURES

**INHALATION:** Immediately remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately.

**SKIN:** Promptly flush skin with lukewarm water. Do not use hot water. Immediately remove contaminated clothing or footwear. If

it sticks, do not pull it off. Cover the affected area with a sterile dressing. Get medical attention immediately.

**EYES:** Immediately flush eyes with large amounts of water for at least 15 minutes keeping the eyes wide open. Consult an eye specialist immediately.

**INGESTION:** Not specifically applicable (gas).

**ADVICE TO PHYSICIAN:** Avoid administering adrenaline or any other similar products.

### 5. FIRE FIGHTING MEASURES

**EXTINGUISHING MEDIA:**

All suitable extinguishing agents can be used.

**FIRE AND EXPLOSION HAZARDS:**



Pressurized container. On heating there is a risk of bursting due to internal pressure build-up. NOT flammable. However, it may present a risk in the event of a fire. Toxic vapours (halogen compounds) are released.

**FIRE FIGHTING INSTRUCTIONS:**

Stay upwind. Evacuate all personnel away from the fumes. Cool down the containers/equipment exposed to heat with a water spray. Fire-fighters must use self-contained breathing apparatus.

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**6. ACCIDENTAL RELEASE MEASURES**

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**SAFEGUARDS (Personnel):**

Avoid contact with skin and eyes. Do not breathe gas. No naked flames. Do not smoke. For further information refer to section 8 “Exposure controls/personal protection.” Heavy vapours. Shut off low-level openings in the vicinity (ventilation shafts, drains. . .) . Prevent the product from entering cellars, basements or pits. Stop the leak. Ventilate spillage area. Ventilate basements.

**ENVIRONMENTAL PRECAUTIONS:**

Prevent the product from spreading into the environment. Contain the spilled material by bunding.

**METHODS FOR CLEANING UP**

Recover:

Recover as much of the product as possible.

Cleaning/Decontamination: Allow residual product to evaporate.

Disposal:

For disposal of contaminated materials refer to section 13: “Disposal Considerations”

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**7. HANDLING AND STORAGE**

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**HANDLING (Personnel):**

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Use with sufficient ventilation to keep employee exposure below recommended limits. Avoid contact with hot surfaces. Avoid high temperatures. Smoking is forbidden.

**STORAGE RECOMMENDATIONS:**

Storage facilities should be equipped with ventilation at low level. Take all necessary precautions to avoid the accidental release of the product outside, due to the rupture of containers or transfer system. Keep the container tightly closed and dry in a cool, well-ventilated area. Keep at temperatures not exceeding 45° and away from any source of heat or ignition.

**INCOMPATIBILITIES:**

Refer to the detailed list of incompatible materials (section 10 “Stability/Reactivity”).

Incompatible with magnesium and its alloys, zinc and its alloys, and aluminum alloys containing more than 2% magnesium.

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**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

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**ENGINEERING CONTROLS:**

Ensure good ventilation of the work station.

**PERSONAL PROTECTIVE EQUIPMENT**

Impervious gloves, chemical splash goggles, and impermeable clothing should be worn when handling refrigerant. Under normal conditions, no respiratory protection is required when using this product. Self-contained breathing apparatus (SCBA) is required in the event of insufficient ventilation. Do not drink, eat or smoke in the workplace.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**APPEARANCE:**

Colorless

**PHYSICAL STATE:**

Compressed liquefied gas

**FLASH POINT:**

Not applicable

**ODOR:**

Slight ethereal

**pH:**

Not applicable

**BOILING POINT:**

-46.2°C to -41.5°C

**OXIDIZING PROPERTIES:**

Non oxidizing material according to EC criteria.

**VAPOR PRESSURE:**

1220 kPa, @ 25°C

**SPECIFIC GRAVITY:**

1157 kg/m<sup>3</sup> @ 25°C

**SOLUBILITY:**

Slightly soluble in water

Soluble in common solvents

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## 10. STABILITY AND REACTIVITY

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**NORMALLY STABLE? (CONDITIONS TO AVOID):**

The product is stable. However, avoid open flames and high temperatures.

**INCOMPATIBILITIES:**

Incompatible with alkali or alkaline earth metals, powdered metals, magnesium.

**DECOMPOSITION:**

Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and possibly carbonyl fluoride.

**POLYMERIZATION:**

Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

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**Acute Toxicity:**

According to the data on the components Not classified as harmful by inhalation (\*)

Pentafluoroethane: LC50 inhalation, 4hr.: > 800,000 ppm (rat)

1,1,1,2-Tetrafluoroethane: LC50 inhalation, 4hr.: > 500,000 ppm (rat)

Isobutane: LC50 inhalation, 2hr.: > 520,000 ppm (mouse)

(Published data)

**Acute Symptoms:**

Effects following high level exposure: Headaches, Dizziness, Loss of consciousness.

Possible effects, following high level exposure: Cardiac disorders, possibility of cardiac arrest.

**Local Effects:**

Contact with liquefied gas causes frostbite and injury to the corneas.

**Repeated Dose Toxicity:** In tests done on the components of the preparation

Pentafluoroethane & 1,1,1,2-Tetrafluoroethane:

No observed effect level (NOEL): 50,000 ppm (\*) (Published data)

**SPECIFIC EFFECTS****Mutagenicity:**

According to the data on the components Product is not considered to be genotoxic (\*)

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(Published data)

**Reproductive toxicity:** In the tests done on the components of the preparation Fertility and developmental toxicity tests

did not reveal any effect on reproduction. ( $\geq 50,000$  ppm) (\*) (Published data)

**FURTHER INFORMATION:**

Not classified as hazardous according to EEC criteria.

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## 12. ECOLOGICAL INFORMATION

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### MOBILITY

**Volatility:**

Product is volatile when in aqueous solution.

**Expected behavior of the product:**

### BIODEGRADABILITY

**Ultimate aerobic biodegradability:**

Not readily biodegradable. (evaluation by structure-activity relationship)

### BIOACCUMULATION

**Bioconcentration factor:**

No information available.

### ECOTOXICITY

**--Effects on the aquatic environment:**

No information available.

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## 13. DISPOSAL CONSIDERATIONS

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### WASTE DISPOSAL:

Do not allow product to be released into the environment. Disposal must comply with federal, state, and local disposal or discharge laws. Consult the manufacturer or supplier for information regarding recovery and recycling of the product. If recovery is not possible, incinerate at a licensed installation.

### CONTAMINATED PACKAGING

**Decontamination/Cleaning:**

De-gas

**Destruction/Disposal:**

Re-usable containers: Return to the supplier

Disposable containers: Dispose of at an authorized landfill site.

**NOTE:**

The user's attention is drawn to the possible existence of local regulations regarding disposal.

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## 14. TRANSPORT INFORMATION

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### DOT/IMO/IATA:

US DOT PROPER SHIPPING NAME: Liquefied gas, n.o.s. (pentafluoroethane and tetrafluoroethane)

US DOT HAZARD CLASS: 2.2

SHIPPING LABEL: Nonflammable Gas

US DOT ID NUMBER: UN3163

(ICAO-IATA): Cargo aircraft: Packing instruction: 200 Quantity: 150 kg

: Passenger aircraft: Packing instruction: 200 Quantity: 75 kg

**NOTE:**

The above regulatory prescriptions are those valid on the date of publication of this sheet.

Given the possible evolution of transport regulations for hazardous materials, it would be advisable to

check their validity with your sales office.

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## 15. REGULATORY INFORMATION

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### LABELLING

#### EC REGULATIONS:

Mandatory labeling (self-classification) of hazardous preparations: Not applicable

#### -R phrases

No R phrases

#### -S phrases

No S phrases

#### NOTE:

The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the Material Safety Data Sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

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## 16. OTHER INFORMATION

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#### CURRENT ISSUE DATE:

October, 2004

#### PREVIOUS ISSUE DATE:

NA

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