



# MATERIAL SAFETY DATA SHEET

## R-410A

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name :** FLORON R-410A

**TRADE NAMES/SYNONYMS:** R-410A

**Product Use :** Refrigerant

**Manufacturers:** SRF Ltd. Chemicals Business  
V&PO: JHIWANA, Tehsil. TIJARA, Dist. - ALWAR,  
RAJASTHAN, INDIA  
Pin Code-301019

**EMERGENCY CONTACT: (24 Hours/Day, 7 Days/Week)**  
**Mr. Manoj Kumar Sharma**  
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### 2. COMPOSITION, INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
Difluoromethane	75-10-5	50
Pentafluoroethane	354-33-6	50

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW:

Colorless, volatile liquid with ethereal and faint sweetish odor. **Non-flammable material.** Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250degC), decomposition products may include Hydrofluoric Acid(HF) and carbonyl halides.

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## POTENTIAL HEALTH HAZARDS

**SKIN CONTACT:** Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

**EYE CONTACT:** Liquid contact can cause severe irritation and frostbite. Mist may irritate.

**INHALATION:** R-410A is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

**INGESTION:** not considered a potential Route of exposure.

## 4. FIRST AID MEASURES

**INHALATION:** If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

**SKIN CONTACT:** If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105- 115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

**EYE CONTACT:** Flush eyes with plenty of water.

**INGESTION:** If a large amount is swallowed, get medical attention.

**NOTE TO PHYSICIAN:** For inhalation, consider oxygen.

## 5. FIRE FIGHTING MEASURES

### FLAMMABLE PROPERTIES

**FLASH POINT:** Gas, not applicable per DOT regulations

**FLASH POINT METHOD:** Not applicable

**AUTOIGNITION TEMPERATURE:** >750°C

**UPPER FLAME LIMIT (volume % in air):** None by ASTM D-56-82

**LOWER FLAME LIMIT (volume % in air):** None by ASTM E-681

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**FLAME PROPAGATION RATE (solids):** Not applicable  
**OSHA FLAMMABILITY CLASS:** Not applicable

**EXTINGUISHING MEDIA:**

Use any standard agent – choose the one most appropriate for type of surrounding fire (**material itself is not flammable**)

**UNUSUAL FIRE AND EXPLOSION HAZARDS:**

R-410A is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

**SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:**

Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

## **6. ACCIDENTAL RELEASE MEASURES**

**OCCUPATIONAL RELEASE:**

Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

## **7. HANDLING AND STORAGE**

**NORMAL HANDLING:** (Always wear recommended personal protective equipment.)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

R-410A should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

**STORAGE RECOMMENDATIONS:**

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Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

### ENGINEERING CONTROLS:

Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

### PERSONAL PROTECTIVE EQUIPMENT

#### SKIN PROTECTION:

Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with the liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

#### EYE PROTECTION:

For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggle.

#### RESPIRATORY PROTECTION:

None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, use a self-contained, NIOSH- approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH-approved gas mask with organic vapor canister.

### EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL
Difluoromethane	None	None
Pentafluoroethane	None	None

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE:** Clear, colorless liquid and vapor

**PHYSICAL STATE:** Gas at ambient temperatures

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**MOLECULAR WEIGHT:** 72.6

**CHEMICAL FORMULA:** CH<sub>2</sub>F<sub>2</sub>, CHF<sub>2</sub>CF<sub>3</sub>

**ODOR:** Faint ethereal odor

**SPECIFIC GRAVITY (water = 1.0):** 1.08 @ 21.1°C (70°F)

**SOLUBILITY IN WATER (weight %):** Unknown

**pH:** Neutral

**BOILING POINT:** -48.5°C (-55.4°F)

**FREEZING POINT:** Not determined

**VAPOR PRESSURE:** 215.3 psia @ 70°F

490.2 psia @ 130°F

**VAPOR DENSITY (air = 1.0):** 3.0

**EVAPORATION RATE:** >1 COMPARED TO: CC14 = 1

**% VOLATILES:** 100

**FLASH POINT:** Not applicable

(Flash point method and additional flammability data are found in Section 5.)

## 10. STABILITY AND REACTIVITY

### (CONDITIONS TO AVOID):

The product is stable.

Do not mix with oxygen or air above atmospheric pressure. Any source of high temperature, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

### INCOMPATIBILITIES:

(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically active metals: potassium, calcium, powdered aluminum, magnesium and zinc.

### HAZARDOUS DECOMPOSITION PRODUCTS:

Halogens, halogen acids and possibly carbonyl halides.

### HAZARDOUS POLYMERIZATION:

Will not occur.

## 11. TOXICOLOGICAL INFORMATION

### IMMEDIATE (ACUTE) EFFECTS:

Difluoromethane: LC<sub>50</sub> : 4 hr. (rat) -  $\geq$  520,000 ppm

Pentafluoroethane: Cardiac Sensitization threshold (dog)  $\geq$  100,000 ppm

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**DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:**

Teratology – negative

Subchronic inhalation (rat) NOEL – 50,000 ppm

**OTHER DATA:**

Not active in four genetic studies

**12. ECOLOGICAL INFORMATION**

**Degradability (BOD):** R-410A is a gas at room temperature; therefore, it is unlikely to remain in water.

**13. DISPOSAL CONSIDERATIONS**

Dispose in accordance with all applicable regulations.

**14. TRANSPORT INFORMATION**

**DOT**

Proper shipping name : LIQUEFIED GAS, N.O.S. (Pentafluoroethane, Difluoromethane)

Hazard Class                    2.2

Packing group                Not Applicable

UN/ID No. :                    UN 3163

**15. REGULATORY INFORMATION**

**SARA 311/312 Hazards :** Acute Health Hazard

Sudden Release of Pressure Hazard

Global warming potential : 1,975

Ozone depletion potential : 0

(ODP)

US. Toxic Substances        : On TSCA Inventory

Control Act

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## 16. OTHER INFORMATION

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