



MATERIAL SAFETY DATA SHEET

F-410A

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: FLORON F-410A

TRADE NAMES/SYNONYMS: F-410A

Product Use: Refrigerant

Manufacturers: SRF Ltd. Chemicals Business
V&PO: JHIWANA, Tehsil. TIJARA, Dist. - ALWAR,
RAJASTHAN, INDIA
Pin Code-301018

EMERGENCY CONTACT: (24 Hours/Day, 7 Days/Week)
Mr. Manoj Kumar Sharma
+91 – (01493) 245 400

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.

SRF LIMITED

Block-C, Sector-45
Gurgaon 122 003
Haryana, India
Tel: +91-124-4354400
Fax: +91-124-4354500
Website: www.srf.com

Regd. Office:

Unit No. 236 & 237, 2nd Floor,
DLF Galleria, Mayur Place, Noida
Link Road, Mayur Vihar Phase I
Extn, Delhi- 110 091, India

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: F-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

SRF LIMITED

Block-C, Sector-45
Gurgaon 122 003
Haryana, India
Tel: +91-124-4354400
Fax: +91-124-4354500
Website: www.srf.com

Regd. Office:

Unit No. 236 & 237, 2nd Floor,
DLF Galleria, Mayur Place, Noida
Link Road, Mayur Vihar Phase I
Extn, Delhi- 110 091, India



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

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:

F-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:

SRF LIMITED

Block-C, Sector-45
Gurgaon 122 003
Haryana, India
Tel: +91-124-4354400
Fax: +91-124-4354500
Website: www.srf.com

Regd. Office:

Unit No. 236 & 237, 2nd Floor,
DLF Galleria, Mayur Place, Noida
Link Road, Mayur Vihar Phase I
Extn, Delhi- 110 091, India



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

SRF LIMITED

Block-C, Sector-45
Gurgaon 122 003
Haryana, India
Tel: +91-124-4354400
Fax: +91-124-4354500
Website: www.srf.com

Regd. Office:

Unit No. 236 & 237, 2nd Floor,
DLF Galleria, Mayur Place, Noida
Link Road, Mayur Vihar Phase I
Extn, Delhi- 110 091, India

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear, colorless liquid and vapor

PHYSICAL STATE: Gas at ambient temperatures

MOLECULAR WEIGHT: 72.6

CHEMICAL FORMULA: CH₂F₂, CHF₂CF₃

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.

SRF LIMITED

Block-C, Sector-45
Gurgaon 122 003
Haryana, India
Tel: +91-124-4354400
Fax: +91-124-4354500
Website: www.srf.com

Regd. Office:

Unit No. 236 & 237, 2nd Floor,
DLF Galleria, Mayur Place, Noida
Link Road, Mayur Vihar Phase I
Extn, Delhi- 110 091, India

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Difluoromethane: LC50 : 4 hr. (rat) - $\geq 520,000$ ppm

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

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): F-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

SRF LIMITED

Block-C, Sector-45

Gurgaon 122 003

Haryana, India

Tel: +91-124-4354400

Fax: +91-124-4354500

Website: www.srf.com

Regd. Office:

Unit No. 236 & 237, 2nd Floor,

DLF Galleria, Mayur Place, Noida

Link Road, Mayur Vihar Phase I

Extn, Delhi- 110 091, India

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

16. OTHER INFORMATION

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

SRF LIMITED

Block-C, Sector-45
Gurgaon 122 003
Haryana, India
Tel: +91-124-4354400
Fax: +91-124-4354500
Website: www.srf.com

Regd. Office:

Unit No. 236 & 237, 2nd Floor,
DLF Galleria, Mayur Place, Noida
Link Road, Mayur Vihar Phase I
Extn, Delhi- 110 091, India