

SAFETY DATA SHEET

FLORON-467A refrigerant

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: FLORON-467A

TRADE NAMES/SYNONYMS: R-467A

Product Use: Synthetic/Analytical chemistry.

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)
M/S. SRF. Limited
+91 – (01493) 245163, 400

2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Classification : Gases under pressure, Liquefied gas.

GHS label elements

Hazard Pictogram :



GHS04

Signal word : **Warning**
Hazard pictogram code : **GHS04 gas cylinder**
Hazard Statement : **H280:** Contains gas under pressure, may explode if heated.
H281: Contains refrigerated gas; may cause cryogenic burns or injury.
Symbol : **Gas Cylinder.**
Precautionary statements : **P410+P403:** Protect from sunlight. Store in a well-ventilated place.
P282: Wear cold insulating gloves/face shield/eye protection.
P403: Store in a well-ventilated place.

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Do not ingest. Can cause target organ damage. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Compositions
Pentafluoroethane (R-125)	354-33-6	5%
1,1,1,2-Tetrafluoroethane (R-134a)	811-97-2	72.4%
Difluoromethane (R-32)	75-10-5	22%
iso Butane (R-600a)	75-28-5	0.6%

4. FIRST AID MEASURES

INHALATION: Acute-Inhalation: very high concentration. May cause CNS depression w/dizziness, incoordination, drowsiness or Unconsciousness, irregular heartbeat, suffocation.

SKIN CONTACT: Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

EYE CONTACT: Liquid can cause burns similar to frostbite.

INGESTION: not considered a potential Route of exposure.

NOTE TO PHYSICIAN: For inhalation, consider oxygen.

5. FIRE FIGHTING MEASURES

Fire-fighting media and instructions

Use an extinguishing agent suitable for the surrounding fire.

Apply water from a safe distance to cool container and protect surrounding area.

If involved in fire, shut off flow immediately if it can be done without risk. Contains gas under pressure. Extremely flammable liquefied gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

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6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES:

If a spill can cause a concentration in excess of 1,000 ppm, turn off valves and ignition sources. Evacuate area. Ventilate area, especially low places where heavy vapors might collect. Wear self-contained breathing apparatus (SCBA). If this product is spilled and not recovered, or is recovered as a waste for treatment or disposal. CERCLA Reportable Quantity is 100 lbs. (Release of an unlisted Hazardous Waste characteristic of ignitability).

7. HANDLING AND STORAGE

Ensure equipment is adequately earthed. Suck back of water into the container must be prevented. Purge air from system before introducing gas. Do not allow backed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Keep away from ignition sources (including static discharges). Segregate from oxidant gases and other oxidants in store. Keep container below 50°C in a well ventilated place.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

1000 ppm, TWA (8 Hrs.)

VENTILATION: Provide local exhaust ventilation system. Ventilation equipment should be explosion resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

EYE PROTECTION: For the gas: Eye protection not required, but recommended.

For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear insulated gloves.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Molecular weight	84.42
Melting point	-104.5 °C
Boiling point	-40.5 °C
Relative density, gas	36.957 Kg/m ³
Relative density, liquid	1130.2 Kg/m ³
Vapor Pressure 25°C	10.53 bar
Solubility mg/l water	Insoluble.
Appearance/Colour	Colour less gas
Odor	Very faint ether-like
Poor warning properties at low concentrations.	
Auto-ignition temperature	NA
Flammability	Nonflammable as formulated
Burning velocity (cm/s)	4
Critical temperature	91.96 °C
Critical Pressure	46.59 bar
Other data Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level.	

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal conditions.

CONDITIONS TO AVOID: Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES: NA

POLYMERIZATION: NA

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components:

Pentafluoroethane:

Acute inhalation toxicity: LC50 (Rat) : > 769,000 ppm

Exposure time: 4 h

Test atmosphere: gas

Method: OECD Test Guideline 403

1, 1, 1, 2-Tetrafluoroethane:

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Acute inhalation toxicity: LC50 (Rat) : > 359,300 ppm
Exposure time: 4 h
Test atmosphere: gas
No observed adverse effect concentration (Dog): 40000 ppm
Test atmosphere: gas

Difluoromethane:

Acute inhalation toxicity: LC50 (Rat) : > 760,000 ppm
Exposure time: 4 h
Test atmosphere: gas
Lowest observed adverse effect concentration (Dog) : > 350000 ppm
Symptoms: Cardiac sensitization
No observed adverse effect concentration (Dog): 350000 ppm
Symptoms: Cardiac sensitization
Cardiac sensitization threshold limit (Dog): > 735,000 mg/m³
Symptoms: Cardiac sensitization

Iso Butane:

Acute inhalation toxicity: LC50 (Rat): 143,000 ppm
Exposure time: 4 h
Test atmosphere: vapor

Cardiac Sens Limit	: 72100
Anesthetic Limit	: 157000
Calc OEL	: 998

ATEL for the blend R-32/125/134a/600a, (22.0/5.0/72.4/0.6 percent by weight) after rounding is 72,000 ppm (250 g/m³, 16 lb/MCF) based on cardiac sensitization

The calculated OEL (8 hour TWA) for the blend after rounding is 1,000 ppm and thus meets the criterion for "A" classification for toxicity under ASHRAE Standard 34
For code purposes, the blend is "neither highly toxic nor toxic"

12. ECOLOGICAL INFORMATION

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Persistence and Degradability Product	: Not applicable to gases and gas mixtures.
Bio accumulative potential Product	: The subject product is expected to biodegrade and is not expected to persist for long periods in an aquatic environment.
Mobility in soil	: Product Because of its high volatility, the product is unlikely to cause ground or water pollution.
Other adverse effects:	
In the air : ODP (R-11=1)	= Zero (ozone depletion potential).
GWP (w.r.t. CO2 (time horizon 100 years))	= 1249 (greenhouse effect potential).

13. DISPOSAL CONSIDERATIONS

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

14. TRANSPORT INFORMATION

International regulations:

UN number	: 3163 (Liquefied gas, nos)
DOT/IATA/IMDG	: UN 3163
Proper Shipping Name	: LIQUIFIED GAS, R-467A
Class	: 2.2
Hazard Labels	: 2.2
Marine Pollutant	: Not classified as a Marine Pollutant

Other transport information:

Avoid transport on vehicles where the load space is not separated from the driver's compartment.

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Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

Before transporting product containers ensure that they are firmly secured and:

- Cylinder valve is closed and not leaking
- valve outlet cap nut or plug (where provided) is correctly fitted
- Valve protection device (where provided) is correctly fitted
- There is adequate ventilation.
- Compliance with applicable regulations.

15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA) Components: Listed in Inventory

SARA Title III/CERCLA: Components:

Reportable Quantities (Rqs) No components listed

Threshold Planning Quantities (TPQ) No components listed

Additional Regulatory Information:

US Clean Air Act-40 CFR Part 82

Foreign Inventory Status: Components:

EU-EINECS #2008394 R32

#2065778 R125

#2123770 R134a

#2008572 R600a

Section 311 Hazard Class: IMMEDIATE PRESSURE

Section 313 Toxic chemicals : No components listed.

WHMIS Classification (Canada): This product has been evaluated in accordance with the hazard criteria of CPR and MSDS contains all the information required by CPR.

R-phrases : No R-phrases

S-phrases : S7/9 - Keep container tightly closed in a well-ventilated place

S24/25 - Avoid contact with skin and eyes

S51 - Use only in well ventilated areas

S61 - Avoid release to the environment

16. OTHER INFORMATION

Hazardous Material Information System (U.S.A.)

Health	1
Flammability	1
Reactivity	0

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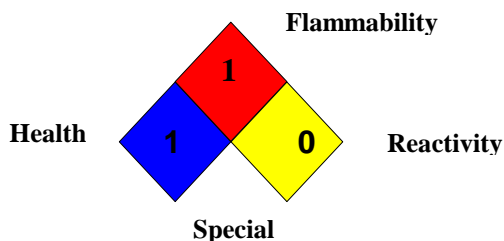
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Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



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