Material Safety Data Sheet

1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

MATERIAL IDENTIFICATION

Molecular Weight: 72.58

TRADENAMES AND SYNONYMS

R410a

COMPANY IDENTIFICATION

MANUFACTURER/DISTRIBUTOR' NAME

Hangzhou Fine Fluorotech Co., Ltd

No.1509 Bingsheng Road, Hangzhou, Zhejiang, China.

PHONE NUMBERS

Product Information: +86-571-86962376

Medical Emergency: +86-571-86962776

2. COMPOSITION/INFROMATION ON INGREDIENTS

COMPONENTS

Material	CAS Number	Weight %
PENTAFLUOROETHANE (HFC-125)	354-33-6	50 %
DIFLUOROMETHANE (HFC-32)	75-10-5	50 %

3. HAZARDS IDENTIFICATION

Potential Health Effects

Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

At flame temperatures, this material can decompose to hydrogen fluoride which can be

lethal at much lower concentrations.

HUMAN HEALTH EFFECTS:

Overexposure to the vapors by inhalation may include temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness. Higher exposures to the vapors may cause temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation. Gross overexposure may be fatal. Skin contact with the liquid may cause frostbite.

Individuals with preexisting diseases of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of increased exposures.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

4. FIRST AID MEASURES

SKIN CONTACT

In case of contact, flush with lukewarm water. Do not use hot water. If frostbite has occurred, call a physician.

EYES CONTACT

In case of contact, immediately flush eyes with plenty of water for 15 minutes. Call a physician.

INHALATION

Immediately remove to fresh air. Keep person calm. Call a physician. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

INGESTION

Ingestion is not considered a potential route of exposure.

ADVICE TO PHYSICIAN

THIS MATERIAL MAY MAKE THE HEART MORE SUSCEPTIBLE TO ARRHYTHMIAS. Catecholamines such as adrenaline, and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.

5. FIRE-FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: **No flash point**

Flammable Limits in air, % by Volume:
LEL: **None per ASTM E681**
UEL: **None per ASTM E681**
Autoignition: **Not determined**

Fire and Explosion Hazards:
Cylinders may rupture under fire conditions. Decomposition may occur.
Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of torch flames. This flame effect will only occur in concentrations of product well above the recommended exposure limit, therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames.

R-410a is not flammable in air at temperatures up to 100 deg C (212 deg F) at atmospheric pressure. However, mixtures of R-410a with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. R-410a can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing R-410a and air, or R-410a in an oxygen enriched atmosphere becomes combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, R-409a should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. For example: R-407C should NOT be mixed with air under pressure for leak testing or other purposes.

EXTINGUISHING MEDIA

As appropriate for combustibles in area.

FIRE FIGHTING INSTRUCTIONS

Cool cylinder with water spray or fog. Self-contained breathing apparatus (SCBA) is required if cylinders rupture and contents are released under fire conditions. Water runoff should be contained and neutralized prior to release.

6. ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Accidental Release Measures

Ventilate area, especially low or enclosed places where heavy vapors might collect. Extinguish open flames. Use self-contained breathing apparatus (SCBA) for large spills or releases. Eliminate electrical sources.

7. HANDLING AND STORAGE

HANDLING （PERSONNEL）

Avoid breathing vapor. Avoid liquid contact with eyes and skin. Use with sufficient ventilation to keep employee exposure below recommended limits. See Fire and Explosion Data section.

STORAGE

Clean, dry area. Do not heat above 52 deg C (125 deg F).

8. EXOPSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Avoid breathing vapors. Avoid contact with skin or eyes. Use with sufficient ventilation to keep employee exposure below the recommended exposure limits. Local exhaust should be used if large amounts are released. Mechanical ventilation should be used in low or enclosed places.

Personal Protective Equipment

Impervious gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be available for use as needed to prevent eye contact. Under normal manufacturing conditions, no respiratory protection is required when using this product provided exposure is maintained at or below occupational limits. Self-contained breathing apparatus (SCBA) is required if a large release occurs.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point:	**-51.6 C (-60.8 F) @ 1 atm**
Vapor Pressure:	**239.7 psia at 25 C (77 F)**
% Volatiles:	**100 WT%**
Solubility in Water:	**Not determined**
Odor:	**Slight ethereal**
Form:	**Liquefied gas**
Color:	**Clear, colorless**
Specific Gravity:	**1.066 @ 25C (77 F)**

10. STABILITY AND REACTIVITY

Chemical Stability

Stable

Conditions to Avoid

Avoid open flames and high temperatures.

Incompatibility with Other Materials

Incompatible with active metals, alkali or alkaline earth metals--powdered Al, Zn, Be, etc.

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. These materials are toxic and irritating. Contact should be avoided.

Polymerization

Polymerization will not occur.

Other Hazards

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 halides.

11. TOXICOLOGICAL INFORMATION

Animal Data

The blend is untested.

HFC-125

Inhalation 4-hour ALC: >709,000 ppm in rats

Single exposure to high doses caused: Lethargy. Labored breathing. Weak cardiac sensitization, a potentially fatal disturbance of heart rhythm caused by a heightened sensitivity to the action of epinephrine. Lowest-Observed-Adverse-Effect-Level for cardiac sensitization: 100,000 ppm. Repeated exposure caused: No significant toxicological effects. No-Observed-Adverse-Effect-Level (NOAEL): 50,000 ppm

ADDITIONAL TOXICOLOGICAL EFFECTS:

No animal data are available to define the following effects of this material: carcinogenicity, reproductive toxicity. In animal testing this material has not caused developmental toxicity. Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. This material has not been tested for its ability to cause permanent genetic damage in reproductive cells of mammals (not tested for heritable genetic damage).

HFC-32

Inhalation 4 hour-ALC: > 520,000 ppm in rats

Single exposure caused: Lethargy. Spasms. Loss of mobility in the hind limbs. Other effects include weak cardiac sensitization, a potentially fatal disturbance of heart rhythm caused by a heightened sensitivity to the action of epinephrine. 250,000 ppm.

Repeated exposure caused pathological changes of the lungs, liver, spleen, kidneys. In more recent studies repeated exposure caused: No significant toxicological effects. No-Observed-Effect-Level (NOEL): 49,100 ppm.

No animal data are available to define the following effects of this material: carcinogenicity, reproductive toxicity. Animal data show slight fetotoxicity but only at exposure levels producing other toxic effects in the adult animal. Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. This material has not been tested for its ability to cause permanent genetic damage in reproductive cells of mammals (not tested for heritable genetic damage).

12. ECOLOGICAL INFORMATION

No information available

13. DISPOSAL CONSIDERATIONS

Waste Disposal

Comply with Federal, State, and local regulations. Reclaim by distillation or remove to a permitted waste disposal facility

14. TRANSPORT INFORMATION

Shipping Information

DOT/IMO/IATA
Proper Shipping Name: Refrigerant Gas R410a
Hazard Class: 2.2
UN No.: 3163
Label(s): Nonflammable Gas

Shipping Containers
Tank Cars
Cylinders
Ton Tanks

15. REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status: Reported/Included.
TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312
Acute: Yes
Chronic: Yes
Fire: No
Reactivity: No
Pressure: Yes
LISTS:
SARA Extremely Hazardous Substance -No
CERCLA Hazardous Substance -No
SARA Toxic Chemical -No

16. OTHER INFORMATION

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product that confirms to the specification, unless otherwise stated. In the case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and

protection of human welfare and environment.

Aug 10th, 2014.

End of MSDS