

**Safety Data Sheet**  
**According to Hazard Communication Standard (29 CFR 1910.1200)**

R410A

Issue date: 04/29/2015

Version 1.0

Revision date: 04/29/2015

### 1. Identification

**Product name** R410A  
**Synonyms** -  
**CAS #** See section 3  
**Product code** -  
**Product use** Used as refrigerants.  
**Manufacturer/Supplier**  
**Supplier(Manufacturer):** T.T.INTERNATIONAL CO., LTD.  
**Address:** ROOM 2911 MANHATTAN BUILDING,105 YOUHAO ROAD  
**Contact person(E-mail):** TONGTAI@CHINAREFRIGERANT.COM  
**Telephone:** +86 411 82537172  
**Fax:** +86 411 82651288  
**Emergency telephone Number:** +86 41182537172(China)

### 2. Hazard(s) identification

#### GHS classification

**Physical hazards** Gases under pressure Compressed gas  
**Health hazards** Not classified  
**Environmental hazards** Not classified

#### GHS label elements

##### Hazard Pictograms



**Signal word** Warning  
**Hazard statement** Contains gas under pressure; may explode if heated.

#### Precautionary statement

**Prevention** Not applicable.  
**Response** Not applicable.  
**Storage** Protect from sunlight. Store in a well-ventilated place.  
**Disposal** Not applicable.

### 3. Composition / information on ingredients

Components	CAS#	Percent
Pentafluoroethane	354-33-6	50.5±1%
Difluoromethane	75-10-5	49.5±1%

### 4. First-aid Measures

#### First aid procedures

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**Eye contact** Immediately irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 10 minutes. Obtain immediate medical attention.

**Skin contact** Thaw affected areas with water. Remove contaminated clothing. Caution: clothing may adhere to the skin in the case of freeze burns. After contact with skin, wash immediately with plenty of warm water. If irritation or blistering occur obtain medical attention.

**Inhalation** Remove patient from exposure, keep warm and at rest. Administer oxygen if necessary. Apply artificial respiration if breathing has ceased or shows signs of failing. In the event of cardiac arrest apply external cardiac massage. Obtain immediate medical attention.

**Ingestion** Ingestion is not considered a potential route of exposure. Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half a pint) of water to drink. Obtain immediate medical attention.

**Notes to physician** Treat symptoms.

## 5. Fire-fighting measures

**Flammable properties** Non flammable.

### Extinguishing media

**Suitable extinguishing media** Use appropriate extinguishing media.

**Unsuitable extinguishing media** Not available.

**Firefighting equipment/instructions** Shut off gas supply if this can be done safely. If possible, take container out of dangerous zone. Cool cylinders with water spray. Self-contained breathing apparatus (SCBA) may be required if cylinders rupture or release under fire conditions.

**Hazardous combustion products** Hydrogen fluoride by thermal decomposition and hydrolysis.

## 6. Accidental release measures

**Personal precautions** Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

**Environmental precautions** Prevent liquid from entering drains, sewers, basements and work pits since the vapour may create a suffocating atmosphere.

**Methods for cleaning up** Provided it is safe to do so, isolate the source of the leak. Allow small spillages to evaporate provided there is adequate ventilation. Large spillages: Ventilate area. Contain spillages with sand, earth or any suitable adsorbent material.

## 7. Handling and storage

**Handling** Avoid inhalation of high concentrations of vapours. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Atmospheric concentrations well below the occupational exposure limit can be achieved by good occupational hygiene practice. The vapor is heavier than air, high concentrations may be produced at low levels where general ventilation is poor, in such cases provide adequate ventilation or wear suitable respiratory protective equipment with positive air supply. Avoid contact with naked flames and hot surfaces as corrosive and very toxic decomposition products can be formed. Avoid contact between the liquid and skin and

eyes. For correct refrigerant composition, systems should be charged using the liquid phase and not the vapor phase.

#### Storage

Keep in a well ventilated place. Keep in a cool place away from fire risk, direct sunlight and all sources of heat such as electric and steam radiators. Avoid storing near to the intake of air conditioning units, boiler units and open drains. Cylinders and Drums: Keep container dry. Storage temperature: < 45°C.

### 8. Exposure controls / personal protection

#### Control parameters:

#### OCCUPATIONAL EXPOSURE LIMITS (OEL)

##### INGREDIENT DATA:

Not Available

##### EMERGENCY LIMITS:

Ingredient	TEEL-1	TEEL-2	TEEL-3
Difluoromethane	1,300 ppm	1300 ppm	39000 ppm

Ingredient	Original IDLH	Revised IDLH
Pentafluoroethane	Not Available	Not Available
Difluoromethane	Not Available	Not Available

#### Exposure controls:

**Appropriate engineering controls** Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

#### Individual protection measures, such as personal protective equipment:

**Eye / face protection** Sufficient eye protection should be worn. When handling compressed gas, at least glasses with side protection should be worn. When handling liquid gas, chemical safety goggles must be used as well as a protective shield.

#### Skin protection

Body protection: Use protective boots while handling gas cylinders.

Hand protection: Wear leather gloves to prevent frostbite injuries from rapidly expanding gas when handling pressurised gas bottles.

**Respiratory protection** In an emergency (e.g.: unintentional release of the substance, exceeding the occupational exposure limit value) respiratory protection must be worn. Consider the maximum period for wear. Wear self-contained breathing apparatus. Do not use filter respirator.

#### General hygiene considerations

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing.

### 9. Physical and chemical properties

#### Appearance

##### Physical state

Gas

##### Form

Compressed liquefied gas

##### Color

Clear, colorless

#### Odor

Slight ethereal

#### Odor threshold

Not available

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<b>pH</b>	Not available
<b>Vapor pressure</b>	10880 mm Hg at 20°C
<b>Melting point/Freezing point</b>	Not available
<b>initial boiling point and boiling range</b>	-51.8°C to -51.9°C
<b>Flash point</b>	Not available
<b>Evaporation rate</b>	Not available
<b>Flammability (solid, gas)</b>	Non flammable
<b>Explosion limits</b>	Not available
<b>Vapor density</b>	2.6 at bubble point temperature. (Air = 1)
<b>Relative density</b>	Not available
<b>Solubility (water)</b>	Insoluble in water
<b>Partition coefficient</b>	1.48(25 °C) (CAS#354-33-6) 0.21 (25 °C) (CAS#75-10-5)
<b>Auto-ignition temperature</b>	Not available
<b>Decomposition temperature</b>	Not available
<b>Specific gravity</b>	Not available
<b>Density</b>	1.09 g/cm <sup>3</sup> at 20°C
<b>Flammability limits in air, upper, %by volume</b>	Not available
<b>Flammability limits in air, lower, % by volume</b>	Not available
<b>VOC</b>	Not available
<b>Percent volatile</b>	Not available
<b>Other data</b>	
<b>Viscosity</b>	Not available

## 10. Stability and reactivity

<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Conditions to avoid</b>	Incompatible materials. Avoid open flames and high temperatures.
<b>Incompatible materials</b>	Finely divided metals, magnesium and alloys containing more than 2% magnesium.
<b>Hazardous decomposition products</b>	Hydrogen fluoride by thermal decomposition and hydrolysis.
<b>Possibility of hazardous reactions</b>	Can react violently if in contact with alkali metals and alkaline earth metals - sodium, potassium, barium.

## 11. Toxicological information

### Toxicokinetics, metabolism and distribution:

**Non-human toxicological data:** Not available

### Information on toxicological effects:

#### Acute toxicity:

Pentafluoroethane (CAS#354-33-6)

**LD50(Oral, Rat):** Not available

**LD50(Dermal, Rabbit):** Not available

**LC50(Inhalation, Rat):** 2910 g/m<sup>3</sup> 4h

#### Acute toxicity:

Difluoromethane (CAS#75-10-5)

**LD50(Oral, Rat):** Not available

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<b>LD50(Dermal, Rabbit):</b>	Not available
<b>LC50(Inhalation, Rat):</b>	> 520000 ppm 4H
<b>Skin corrosion/Irritation:</b>	Not classified.
<b>Serious eye damage/irritation:</b>	Not classified
<b>Respiratory or skin sensitization:</b>	Not classified
<b>Germ cell mutagenicity:</b>	Not classified
<b>Carcinogenicity:</b>	Not classified
<b>Reproductive toxicity:</b>	Not classified
<b>STOT- single exposure:</b>	Not classified
<b>STOT-repeated exposure:</b>	Not classified
<b>Aspiration hazard:</b>	Not classified

## 12. Ecological information

### Toxicity:

Acute toxicity		Time	Species	Method	Evaluation	Remarks
LC50	N/A	96h	Fish	OECD 203	N/A	N/A
EC50	N/A	48h	Daphnia	OECD 202	N/A	N/A
EC50	N/A	72h	Algae	OECD 201	N/A	N/A

Difluoromethane (CAS#75-10-5): Not readily biodegradable.

Pentafluoroethane (CAS#354-33-6): Under test conditions no biodegradation observed.

### Persistence and degradability:

Difluoromethane (CAS#75-10-5): The low octanol-water partition coefficient indicated that the product is not likely to bioaccumulate.

Pentafluoroethane (CAS#354-33-6): No appreciable bioaccumulation potential is to be expected.

### Bioaccumulative potential:

### Mobility in soil:

The product is insoluble in water.

### Results of PBT&vPvB assessment:

The mixture does not contain any PBT / vPvB substance.

### Other adverse effects:

No known significant effects or critical hazards.

## 13. Disposal considerations

### Disposal instructions

Dispose of contents/container in accordance with local/regional/national/international regulations.

### Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied.

## 14. Transport information

### DOT

#### Basic shipping requirements:

<b>UN number</b>	UN3163
<b>Proper shipping name</b>	LIQUEFIED GAS, N.O.S. (contains pentafluoroethane and difluoromethane)
<b>Hazard class</b>	2.2
<b>Packing group</b>	-
<b>Environmental hazards</b>	No

### IATA

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**UN number** UN3163  
**UN proper shipping name** LIQUEFIED GAS, N.O.S. (contains pentafluoroethane and difluoromethane)  
**Transport hazard class(es)** 2.2  
**Packing group** -  
**Environmental hazards** No

**IMDG**

**UN number** UN3163  
**UN proper shipping name** LIQUEFIED GAS, N.O.S. (contains pentafluoroethane and difluoromethane)  
**Transport hazard class(es)** 2.2  
**Packing group** -  
**Environmental hazards** No

**15. Regulatory information**

**Safety, health and environmental regulations/legislation specific for the substance or mixture:**

<p><b>pentafluoroethane (354-33-6) is found on the following regulatory lists</b></p>	<p>"US - Hawaii Air Contaminant Limits" List.          "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" List.</p>
<p><b>Difluoromethane (75-10-5) is found on the following regulatory lists</b></p>	<p>"US - Hawaii Air Contaminant Limits" List.          "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" List.</p>

**16. Other information, including date of preparation or last revision**

**HMIS@ratings** Health: 2  
 Flammability: 1  
 Physical hazard: 3  
**NFPA ratings** Health: 2  
 Flammability: 1  
 Instability: 3  
**Disclaimer** The information in the sheet was written based on the best knowledge and experience currently available.  
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