# *Safety Data Sheet*

***According to Hazard Communication Standard (29 CFR 1910.1200)***

R410A

**Issue date: 07/22/2015** **Version 1.0** **Revision date: 07/22/2015**

## 1. Product and Company Identification

**Material name** R410A

**CAS #** See section 3

**Product code** -

**Product use** -

**Manufacturer/Supplier**

**Supplier(Manufacturer):** ZHEJIANG SANMEI CHEMICAL IND. CO., LTD.

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## 2. Hazards identification

**GHS classification**

**Physical hazards** Gases under pressure Liquefied 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 |
|---|---|---|
| difluoromethane | 75-10-5 | 50% |
| pentafluoroethane | 354-33-6 | 50% |

## 4. First Aid Measures

**First aid procedures**

**Eye contact** Immediately irrigate with eyewash solution or clean water, holding the eyelids apart, foratleast10Minutes.Obtainimmediatemedicalattention.

| | |
|---|---|
| **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 occurs 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 message. Obtain immediate medical attention. |
| **Ingestion** | Do not induce vomiting. Provide 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** | Symptomatic treatment and supportive therapy as indicated. Adrenaline and similar sympathomimetic drugs should be avoided following exposure as cardiac arrhythmia may result with possible subsequent cardiac arrest. |

## 5. Fire Fighting Measure

| | |
|---|---|
| **Flammable properties** | Not flammable. |
| **Extinguishing media** | |
| **Suitable extinguishing media** | As appropriate for surrounding fire. Water spray should be used to cool containers. |
| **Unsuitable extinguishing media** | Not available |
| **Firefighting equipment/instructions** | A self contained breathing apparatus and suitable protective clothing must be worn in fire conditions. See Section 8. Water spray should be used to cool containers. |
| **Hazardous combustion products** | Thermal decomposition will evolve very toxic and corrosive vapors (hydrogen fluoride). |

## 6. Accidental Release Measures

| | |
|---|---|
| **Personal precautions** | Use personal protective equipment. Avoid breathing gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. For personal protection see section 8. |
| **Environmental precautions** | Prevent liquid from entering drains, sewers, basement and work pits. |
| **Methods for cleaning up** | Ventilate area. Contain spillages with sand, earth or any suitable adsorbent material. Prevent liquid from entering drains, sewers, basement and work pits since the vapor may create a suffocating atmosphere. |

## 7. Handling and Storage

| | |
|---|---|
| **Handling** | Avoid inhalation of high concentrations of vapors. Atmospheric level 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 changed using the liquid phase and not the vapor phase. |
| **Storage** | 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. Keep container dry. Storage temperature (Deg C): < 45

## 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 | 1300 ppm | 1300 ppm | 39000 ppm |

| Ingredient | Original IDLH | Revised IDLH |
|---|---|---|
| difluoromethane | 4500 ppm | 2000 ppm |
| pentafluoroethane | Not Available | Not Available |

**Exposure controls:**

**Appropriate engineering controls:** Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open progress equipment.

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

**Eye / face protection** Wear suitable eye /face protection.

**Skin protection** Wear thermal insulating gloves when handling liquefied gases. Wear suitable protective clothing.

**Respiratory protection** In cases of insufficient ventilation, where exposure to high concentrations of vapor.

**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.

## 9. Physical & Chemical Properties

**Appearance**

**Physical state** Liquefied gas

**Form** Liquefied gas

**Color** Colorless

**Odor** Slight ethereal

**Odor threshold** Not available

**pH** Not available

**Vapor pressure** 10880mm Hg at 20 °C

**Vapor density** 2.6 at bubble point temperature

**Boiling point** -51.58 °C - -51.9°C

**Melting point/Freezing point** Not available

**Solubility (water)** Insoluble

**Specific gravity** Not available

**Density** 1.09 at 20°C

| | |
|---|---|
| **Flash point** | Not available |
| **Flammability limits in air, upper, %by volume** | Not available |
| **Flammability limits in air, lower, % by volume** | Not available |
| **Auto-ignition temperature** | Not available |
| **VOC** | Not available |
| **Percent volatile** | Not available |
| **Other data** | |
| **Viscosity** | Not available |
| **Solubility(Other):** | Soluble in chlorinated solvents, alcohols, esters. |

## 10. Chemical Stability & Reactivity Information

| | |
|---|---|
| **Reactivity** | The substance is stable under normal storage and handling conditions. |
| **Chemical stability** | Material is stable under normal conditions. |
| **Conditions to avoid** | Incompatible materials. Heat. |
| **Incompatible materials** | Finely divided metal, magnesium and alloys containing more than 2% magnesium. Can react violently if in contact with alkali metals and alkaline earth metals-sodium, potassium, barium. |
| **Hazardous decomposition products** | Hydrogen fluoride |
| **Possibility of hazardous reactions** | Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions. |

## 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):** | >800000 ppm |
| **Skin corrosion/Irritation:** | Not classified |
| **Serious eye damage/irritation:** | Not classified |
| **Respiratory or skin sensitization:** | Not classified |
| **Germ cell mutagenicity:** | Not classified |
| **Carcinogenicity:** | Not classified |
| **Reproductive toxicity:** | Not classified |
| **STOT- single exposure:** | Not classified |
| **STOT-repeated exposure:** | Not classified |
| **Aspiration hazard:** | 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 |

**Persistence and degradability:** pentafluoroethane (CAS#354-33-6): under test conditions no biodegradation observed
difluoromethane (CAS#75-10-5): Not readily biodegradable

**Bioaccumulative potential:** Not available.

**Mobility in soil:** The product is insoluble in water

**Results of PBT&vPvB assessment:** Not available.

**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:**

**UN number** 3163

**Proper shipping name** REPRIGERANT GAS, N.O.S. ( difluoromethane, pentafluoroethane)

**Hazard class** 2.2

**Packing group** –

**Environmental hazards** No

**IATA**

**UN number** 3163

**UN proper shipping name** REPRIGERANT GAS, N.O.S. ( difluoromethane, pentafluoroethane)

**Transport hazard class(es)** 2.2

**Packing group** –

**Environmental hazards** No

**IMDG**

**UN number** 3163

**UN proper shipping name** REPRIGERANT GAS, N.O.S.( difluoromethane, pentafluoroethane)

**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**

| | |
|---|---|
| **difluoromethane (75-10-5) is found on the following regulatory lists** | "US - Hawaii Air Contaminant Limits" Listed.<br>"US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" Listed. |
| **pentafluoroethane (354-33-6) is found on the following regulatory lists** | "US - Hawaii Air Contaminant Limits" Listed.<br>"US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" Listed. |

## 16. Other Information

| | |
|---|---|
| **HMIS®ratings** | Health: 0<br>Flammability: 1<br>Physical hazard: 1 |
| **NFPA ratings** | Health: 0<br>Flammability: 1<br>Instability: 1 |
| **Disclaimer** | The information in the sheet was written based on the best knowledge and experience currently available. |
| **Issue date** | 07-22-2015 |