SECTION: 1. Product and company identification

1.1.Product identifier

Trade name/designation : Difluoromethane & Pentafluoroethane /R410A

1.2.Relevant identified uses of the substance or mixture and uses advised against

Main use category : Industrial use,Professional use

Specific use(s) : Refrigerant

1.3.Details of the supplier of the safety data sheet

Company : Ruyuan Dongyangguang Fluorine Co.,Ltd.
Chlor-Alkali Industry Base, Development Zone of Ruyuan County,
GUANGDONG, CHINA
Telephone 0751-5286592
E-mail: zhanggh.ginny@dyg-hec.com

1.4.Emergency telephone number

Emergency telephone : +86 0751 5286632

SECTION: 2. Hazards identification

2.1.Classification of the substance or mixture

OSHA Regulatory Status : This material is classified as hazardous under OSHA regulations.

GHS-US classification Gases Under Pressure

GHs Hazard Category Liquefied gas

2.2.Label elements

Hazard pictograms (GHS-US) :

GHS04

Signal word (GHS-US) : Warning

Hazard statements (GHS-US) : Contains gas under pressure; may explode if heated

Precautionary statements (GHS-US) : Protect from sunlight. Store in a well-ventilated place

2.3.Other hazards

Other hazards which do not result in classification : Not applicable

SECTION: 3. Composition/information on ingredients

Substance name	CAS No.	%
pentafluoroethane	354-33-6	49,5 - 51,5
Difluoromethane	75-10-5	48,5 - 50,5

SECTION: 4. First aid measures

4.1.Description of first aid measures

Inhalation : Remove person to fresh air and keep comfortable for breathing.
When in doubt or if symptoms are observed, get medical advice.

Skin contact	:	Take off contaminated clothing. Gently wash with plenty of soap and water. When in doubt or if symptoms are observed, get medical advice.
Eye contact	:	Rinse immediately carefully and thoroughly with eye-bath or water. When in doubt or if symptoms are observed, get medical advice.
In case of ingestion	:	Get medical advice/attention.
Additional advice	:	First aider: Pay attention to self-protection! Personal protection equipment: see section 8 Never give anything by mouth to an unconscious person or a person with cramps. When in doubt or if symptoms are observed, get medical advice. Show this safety data sheet to the doctor in attendance. Treat symptomatically.

4.2.Most important symptoms and effects, both acute and delayed

Inhalation	:	The following symptoms may occur: Dizziness Irritation In high concentration the gas may cause a suffocation. Victim may not be aware of asphyxiation.
Skin contact	:	The following symptoms may occur: Contact with liquid or refrigerated gas can cause cold burns and frostbite.
Eye contact	:	The following symptoms may occur: Irritation.
Ingestion	:	Ingestion is not considered a potential route of exposure.

4.3.Indication of any immediate medical attention and special treatment needed

No data available

SECTION: 5. Firefighting measures

5.1.Extinguishing media

Suitable extinguishing media	:	Water spray, alcohol resistant foam, Dry extinguishing powder, Carbon dioxide
Extinguishing media which must not be used for safety reasons:	:	Strong water jet

5.2.Special hazards arising from the substance or mixture

Fire hazard	:	Non-flammable.
Specific hazards	:	Container may explode if heated.

5.3. Advice for firefighters

Advice for firefighters	:	Special protective equipment for firefighters. In case of fire: Wear self-contained breathing apparatus. Use water spray jet to protect personnel and to cool endangered containers. Do not allow run-off from fire-fighting to enter drains or water courses. Dispose according to legislation. Evacuate area.

SECTION: 6. Accidental release measures

6.1.Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	Evacuate area. Stay upwind/keep distance from source. Provide adequate ventilation. Use personal protective equipment as required. Personal protection equipment: see section 8 Do not breathe gas. Avoid contact with skin, eyes and clothes. Keep away from heat, hot surfaces, sparks, open flames and other ignition

sources. No smoking.
Ensure that the equipment is adequately grounded.
Use explosion-proof machinery, apparatus, ventilation facilities, tools etc.
Use only non-sparking tools.
Keep away from heat.

Do not allow to enter into ground-water, surface water or drains.
If the product contaminates rivers and lakes or drains inform respective authorities.

For emergency responders : Ensure procedures and training for emergency decontamination and disposal are in place.
Personal protection equipment: see section 8.

6.2.Methods and material for containment and cleaning up

Spill or leak statements by chemical : Evacuate area.
Stop flow of gas.
Increase ventilation to release area.

SECTION: 7. Handling and storage

7.1.Precautions for safe handling

Handling : Use explosion-proof machinery, apparatus, ventilation facilities, tools etc.
Provide adequate ventilation.
Use personal protective equipment as required.
Personal protection equipment: see section 8
Do not breathe gas.
Avoid contact with skin, eyes and clothes.
Take any precaution to avoid mixing with incompatible materials.
See also section 10
Ensure proper process control to avoid excess waste discharge (temperature, concentration, pH, time).
Do not allow contact with soil, surface or ground water.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Ensure that the equipment is adequately grounded.
Use only non-sparking tools.
Keep away from heat.

Advices on general occupational hygiene : Keep good industrial hygiene.
Wash hands before breaks and immediately after using the product.
When using do not eat, drink or smoke.
Keep away from food, drink and animal feedingstuffs.
Keep work clothes separately.
Take off contaminated clothing.
Wash contaminated clothing before reuse.

7.2.Conditions for safe storage, including any incompatibilities

Storage : Keep in a dry, cool and well-ventilated place.
Do not store near or with any of the incompatible materials listed in section 10.

Packaging materials : Keep/Store only in original container.

SECTION: 8. Exposure controls/personal protection

8.1. Exposure guidelines

Difluoromethane & Pentafluoroethane		
ACGIH	ACGIH TWA (mg/m³)	No data available

8.2. Engineering controls

Engineering control measures	:	Provide adequate ventilation. Organisational measures to prevent/limit releases, dispersion and exposure Safe handling: see section 7 .
Environmental exposure controls	:	Do not allow contact with soil, surface or ground water. Comply with applicable Community environmental protection legislation.

8.3. Personal protective equipment (PPE)

Personal protection equipment	:	The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection	:	In case of insufficient ventilation, wear suitable respiratory equipment.
Hand protection	:	cold insulating gloves
Eye protection	:	Use suitable eye protection.
Body protection	:	Wear suitable protective clothing.
Thermal hazard protection	:	cold insulating gloves

SECTION: 9. Physical and chemical properties

9.1.Information on basic physical and chemical properties

Appearance	:	liquid,Gas
Colour	:	Not applicable
Odour	:	Ether
Odour threshold:	:	No data available
pH	:	7
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	-48,5 °C
Flash point	:	No data available
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Non flammable
Upper/lower flammability or explosive limits	:	No data available
Vapour pressure	:	No data available
Vapour density	:	No data available
Relative density	:	No data available
Water solubility	:	No data available
Solubility in different media	:	No data available
Partition coefficient n-octanol/water	:	No data available
Auto-ignition temperature	:	> 750 °C
Decomposition temperature	:	No data available
Viscosity	:	No data available
Explosive properties	:	Not applicable,The study does not need to be conducted because there are no chemical groups associated with explosive properties present in the molecule.
Oxidising properties	:	Not applicable The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with oxidising properties.

SECTION: 10. Stability and reactivity

10.1.Reactivity

Reactivity : None under normal processing.
Exothermic reaction with: Aluminium
Reference to other sections:

10.2.Chemical stability

Stability : The product is stable under storage at normal ambient temperatures.

10.3.Possibility of hazardous reactions

Possibility of hazardous reactions : Contains gas under pressure; may explode if heated.

10.4.Conditions to avoid

Conditions to avoid : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Safe handling: see section 7

10.5.Incompatible materials

Incompatible materials : Aluminium Potassium Calcium Magnesium Zinc Safe handling: see section 7

10.6.Hazardous decomposition products

Hazardous decomposition products : Halogenated compounds Carbonyl halides Reference to other sections: 5.2

SECTION: 11. Toxicological information

11.1.Information on toxicological effects

Acute toxicity : Not classified

Difluoromethane & Pentafluoroethane	
LC50/inhalation/4h/rat (ppm)	520000 ppm/4h

Difluoromethane (75-10-5)	
LC50/inhalation/4h/rat (ppm)	520 ppmv/4h

pentafluoroethane (354-33-6)	
LC50/inhalation/4h/rat	2910 g/m³ (Exposure time: 4 h)

Irritation : Not classified
pH: 7

Corrosivity : Not classified
pH: 7

Respiratory or skin sensitisation : Not classified

Repeated dose toxicity : Not classified

Carcinogenicity : Not classified

Mutagenicity : Not classified

Reproductive toxicity : Not classified

Other information : Symptoms related to the physical, chemical and toxicological characteristics
For further information see section 4

SECTION 12: Ecological information

12.1.Toxicity

Toxicity : According to the criteria of the European classification and labelling system, the substance/the product has not to be labelled as "dangerous for the environment".

12.2.Persistence and degradability

Persistence and degradability : Not readily biodegradable

12.3.Bioaccumulative potential

Bioaccumulation : No data available

Partition coefficient n-octanol/water : No data available

12.4.Mobility in soil

Mobility : No data available

12.5.Other adverse effects

Other information : No data available

SECTION 13: Disposal considerations

13.1.Waste treatment methods

Product waste: : Do not allow contact with soil, surface or ground water.
Dispose of empty containers and wastes safely.
Safe handling: see section 7
Refer to manufacturer/supplier for information on recovery/recycling.
Recycling is preferred to disposal or incineration
If recycling is not possible, eliminate in accordance with local valid waste disposal regulations

Contaminated packaging : Handle contaminated packages in the same way as the substance itself.
Dispose according to legislation.
Do not pierce or burn, even after use.
Do not burn, or use a cutting torch on, the empty drum.
Never use pressure to empty container.

SECTION 14: Transport information

14.1. Basic shipping description

DOT

UN-No.(DOT) : 3163

Proper Shipping Name (DOT) : Liquefied gas, n.o.s.

Transport hazard class(es) (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115

Hazard labels (DOT) : 2.2 - Non-flammable gas

Environmental hazards : NA

14.2 Additional information

IMDG

UN-No : 3163

Proper shipping name IATA/IMDG : LIQUEFIED GAS, N.O.S. (pentafluoroethane ; Difluoromethane)

Class or Division : 2

ICAO/IATA

UN-No	:	3163
Proper shipping name IATA/IMDG	:	LIQUEFIED GAS, N.O.S. (pentafluoroethane ; Difluoromethane)
Class or Division	:	2

SECTION: 15. Regulatory information

15.1. US Federal regulations

Difluoromethane (75-10-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

pentafluoroethane (354-33-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

15.2.1. CANADA

Difluoromethane (75-10-5)

WHMIS Classification — Class A - Compressed Gas

pentafluoroethane (354-33-6)

Listed on the Canadian DSL (Domestic Sustances List)

WHMIS Classification — Uncontrolled product according to WHMIS classification criteria

15.2.2. National regulations

Difluoromethane (75-10-5)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican national Inventory of Chemical Substances)

pentafluoroethane (354-33-6)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on Turkish inventory of chemical

15.3. US State regulations

Difluoromethane (75-10-5)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	No	No	No	

pentafluoroethane (354-33-6)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	No	No	No	

Difluoromethane (75-10-5)

U.S. - Delaware - Volatile Organic Compounds Exempt from Requirements
U.S. - Maine - Air Pollutants - Greenhouse Gases (GHG)
U.S. - Massachusetts - Volatile Organic Compounds Exempt From Requirements
U.S. - New Jersey - Excluded Volatile Organic Compounds
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term

pentafluoroethane (354-33-6)

U.S. - Delaware - Volatile Organic Compounds Exempt from Requirements
U.S. - Maine - Air Pollutants - Greenhouse Gases (GHG)
U.S. - Massachusetts - Volatile Organic Compounds Exempt From Requirements
U.S. - New Jersey - Excluded Volatile Organic Compounds
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term

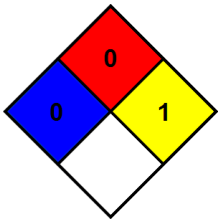
SECTION: 16. Other information

Issue date : 30/04/2015
Supersedes :

Abbreviations and acronyms : ABM = Algemene beoordelingsmethodiek
ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin
ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route
CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC
IATA = International Air Transport Association
IMDG = International Maritime Dangerous Goods Code
LEL = Lower Explosive Limit/Lower Explosion Limit
UEL = Upper Explosion Limit/Upper Explosive Limit
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
BTT = Breakthrough time (maximum wearing time)
DMEL = Derived minimal effect level
DNEL = Derived No Effect Level
EC50 = Median Effective Concentration
EL50 = Median effective level
ErC50 = EC50 in terms of reduction of growth rate
ErL50 = EL50 in terms of reduction of growth rate
EWC = European Waste Catalogue
LC50 = Median lethal concentration
LD50 = Median lethal dose
LL50 = Median lethal level
NA = Not applicable
NOEC = No observed effect concentration
NOEL: no-observed-effect level
NOELR = No observed effect loading rate
NOAEC = No observed adverse effect concentration
NOAEL = No observed adverse effect level
N.O.S. = Not Otherwise Specified
OEL = Occupational Exposure Limits - Short Term Exposure Limits (STELs)
PNEC = Predicted No Effect Concentration
Quantitative structure-acivity relationship (QSAR)
STOT = Specific Target Organ Toxicity
TWA = time weighted average
VOC = Volatile organic compounds
WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act)

NFPA-code

NFPA health hazard : 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.
NFPA fire hazard : 0 - Materials that will not burn.
NFPA reactivity : 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.



HMIS III Rating

Health : 0 Minimal Hazard - No significant risk to health
Flammability : 0 Minimal Hazard
Physical : 1 Slight Hazard

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other

reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.