R410A

Version 2.3 Revision Date 18.11.2014 Supersedes 1

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name	:	R410A
Type of product	:	Mixture
Remarks	:	SDS according to Art. 31 of Regulation (EC) 1907/2006.

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

Use of the Substance/Mixture	:	Refrigerant
Uses advised against	:	none

1.3. Details of the supplier of the safety data sheet

Company	:	Whynter 436 CHANGJIANG road, HEFEI, ANHUI CHINA	Whynter 12406 Bell Ranch Dr Santa Fe Springs, CA 90670 USA
Telephone	:	(+8655162832254	
Telefax	:	(+8655162832199	
For further information, please contact:	:	info@whynter.com	

1.4. Emergency telephone number

Emergency telephone number	:	(+8655162832165

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Gases under pressure Press. Gas
H280 Contains gas under pressure; may explode if heated.

DIRECTIVES 67/548/EEC or 1999/45/EC

This mixture is not classified as dangerous according to Directive 1999/45/EC.

2.2. Label elements

REGULATION (EC) No 1272/2008

Hazard pictograms	:		
Signal word	:	Warning	
Hazard statements	:	H280	Contains gas under pressure; may explode if heated.
Precautionary statements	:	P281	Use personal protective equipment as required.
		P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
		P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
		P308 + P313	IF exposed or concerned: Get medical advice/ attention.
		P410 + P403	Protect from sunlight. Store in a well-ventilated place.

DIRECTIVES 67/548/EEC or 1999/45/EC

S-phrase(s)	:	S47/49	Keep only in the original container at a temperature not exceeding 50 °C.

Special labelling of certain products:	:	Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

2.3. Other hazards

Potential health effects

Skin	:	Rapid evapouration of the liquid may cause frostbite.
Eyes	:	May irritate eyes.
Ingestion	:	Unlikely route of exposure.
Inhalation	:	High vapour concentrations can cause headaches, dizziness, drowsiness, and nausea, and may lead to unconsciousness. May cause cardiac arrhythmia.
Chronic Exposure	:	None known.
Further information	:	Warning! Container under pressure.

Potential environmental effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Type of product : Mixture

Chemical Name	**CAS-No. Index-No. Registration number EC-No.**	**Classification 1272/2008**	**Classification 67/548/EEC**	Concentration	Remarks
Difluoromethane	75-10-5 01-2119471312-47 200-839-4	Flam. Gas 1; H220 Press. Gas ; H280	F+; R12	>= 25 - < 50	1*
Pentafluoroethane	354-33-6 01-2119485636-25 206-557-8	Press. Gas ; H280		>= 25 - < 50	1*

1* - For specific concentration limits/M-factor see Annexes of 1272/2008
N.C.* - Non-hazardous substance - for information only

Occupational Exposure Limit(s), if available, are listed in Section 8.
For the full text of the R-phrases/ H-statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation : Remove to fresh air. Artificial respiration and/or oxygen may be necessary. Call a physician immediately.

Skin contact : Rapid evapouration of the liquid may cause frostbite. In case of contact with liquid, thaw frosted parts with water, then remove clothing carefully. Wash with plenty of water Consult a physician. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use.

Eye contact : Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.

Ingestion : Ingestion is unlikely because of the physical properties and is not expected to be hazardous. As this product is a gas, refer to the inhalation section.

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

no data available

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

Do not give adrenaline or similar drugs.

See Section 11 for more detailed information on health effects and symptoms. :

5. FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media	:	The product is not flammable. ASTM D 56-82 ASTM E-681 Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Extinguishing media which shall not be used for safety reasons	:	High volume water jet

5.2. Special hazards arising from the substance or mixture

Possibility of generating hazardous reactions during a fire due to the presence of F and Cl groups.
Heating will cause pressure rise with risk of bursting
Cool closed containers exposed to fire with water spray.
This product is not flammable at ambient temperatures and atmospheric pressure.
However, this material can ignite when mixed with air under pressure and exposed to strong ignition sources.

5.3. Advice for firefighters

Wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Immediately contact emergency personnel. Wear personal protective equipment. Unprotected persons must be kept away. Ensure adequate ventilation. In case of insufficient ventilation wear suitable respiratory equipment.

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. The product evapourates readily.

6.3. Methods and materials for containment and cleaning up

Ventilate the area.

6.4. Reference to other sections

For personal protection see section 8.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling	:	Open drum carefully as content may be under pressure. The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material. Do not use in areas without adequate ventilation. Contaminated equipment (brushes, rags) must be cleaned immediately with water.

7.2. Conditions for safe storage, including any incompatibilities

Further information on storage conditions	:	Store in original container. Keep away from direct sunlight. Keep containers tightly closed in a cool, well-ventilated place.

7.3. Specific end use(s)

Specific use information	:	Restricted to professional users. For industrial use only.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

DNEL/ PNEC-Values

No DNEL-data available.

No PNEC data available.

8.2. Exposure controls

Occupational exposure controls

The Personal Protective Equipment must be in accordance with EN standards:respirator EN 136, 140, 149; safety glasses EN 166; protective suit: EN 340, 463, 468, 943-1, 943-2; gloves EN 374, safety shoes EN-ISO 20345.

Environmental exposure controls

Handle in accordance with local environmental regulations and good industrial practices.

Personal protective equipment

Respiratory protection	:	Remarks: In case of insufficient ventilation wear suitable respiratory equipment.
Hand protection	:	Glove material: Viton (R) Gloves must be inspected prior to use. Replace when worn. Protective gloves against cold (EN 511) Remarks: Supplementary note: The specifications are based on information and tests from similar substances by analogy. Due to varying conditions (e.g.temperature or other strains) it must be considered that the usage of a chemical protective glove in practice may be much shorter than the permeation time determined in accordance with EN 374. Since actual conditions of practical use often deviate from standardised conditions according EN 374 the glove manufacturer reccomends to use the chemical protective glove in practice not longer than 50% of the recomended permeation time. Manufacturer´s directions for use should be observed because of great diversity of types . Suitable gloves tested according EN 374 are supplied e.g. from KCL GmbH, D-36124 Eichenzell, Vertrieb@kcl.de
Eye protection	:	Safety glasses with side-shields conforming to EN166 Face-shield
Skin and body protection	:	Protective footwear

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Form	:	Liquefied gas
Colour	:	colourless
Odour	:	weak
molecular weight	:	Not applicable
Boiling point/boiling range	:	-48,5 °C
Flash point	:	Not applicable
Lower explosion limit	:	None
Upper explosion limit	:	None
Vapour pressure	:	14.844 hPa at 21,1 °C
Vapour pressure	:	33.798 hPa at 54,4 °C
Density	:	1,08 g/cm3 at 21,1 °C
pH	:	neutral
Water solubility	:	1,5 g/l
Partition coefficient: n-octanol/water	:	log Pow 1,48 Medium: Ethane, pentafluoro- (HFC-125)
Partition coefficient: n-octanol/water	:	log Pow 0,21 Medium: Difluoromethane (HFC-32)
Relative vapour density	:	3 (Air = 1.0)
Evaporation rate	:	> 1 Method: Compared to CCl4.

10. STABILITY AND REACTIVITY

10.1. Reactivity

Stable under normal conditions.
Hazardous polymerisation does not occur.

10.2. Chemical stability

no data available

10.3. Possibility of hazardous reactions

no data available

10.4. Conditions to avoid

Heating will cause pressure rise with risk of bursting
Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C.
Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material.

10.5. Incompatible materials

oxidising substances
Possible incompatibility with alkali sensitive materials.
Powdered metals

10.6. Hazardous decomposition products

Halogenated compounds
Hydrogen fluoride
Carbonyl halides
Carbon oxides

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute oral toxicity	:	Not applicable
Acute dermal toxicity	:	no data available
Acute inhalation toxicity	:	LC50 Species: Rat Value: > 800000 ppm Exposure time: 4 h Test substance: Ethane, pentafluoro- (HFC-125)
Acute inhalation toxicity	:	LC50 Species: Rat Value: 520000 ppm Exposure time: 4 h Test substance: Difluoromethane (HFC-32)
Skin irritation	:	no data available
Eye irritation	:	no data available

Sensitisation	:	no data available
Repeated dose toxicity	:	Species: Rat NOAEL : 20000 ppm
Further information	:	Ethane, pentafluoro- (HFC-125): Cardiac sensitisation threshold (dog): 75000 ppm. Difluoromethane. (HFC-32): Cardiac sensitisation threshold (dog): 350000 ppm. Inhalation: May cause cardiac arrhythmia. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Rapid evapouration of the liquid may cause frostbite.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Toxicity to fish	:	no data available
Toxicity to aquatic plants	:	no data available
Toxicity to aquatic invertebrates	:	no data available

12.2. Persistence and degradability

no data available

12.3. Bioaccumulative potential

no data available

12.4. Mobility in soil

no data available

12.5. Results of PBT and vPvB assessment

no data available

12.6. Other adverse effects

Additional ecological information	:	Accumulation in aquatic organisms is unlikely.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Product	:	Offer surplus and non-recyclable solutions to a licensed disposal company. Refer to manufacturer/supplier for information on recovery/recycling.
Remarks	:	To present knowledge of the supplier, this product is not regarded as hazardous waste as defined by EU Directive 91/689/EC.
Waste key for the unused product	:	Classification: 14.06.01
Further information	:	Provisions relating to waste: EC Directive 2006/12/EC; 2008/98/EEC Regulation No. 1013/2006

For personal protection see section 8.

14. TRANSPORT INFORMATION

ADR/RID

UN Number	:	3163
Description of the goods	:	LIQUEFIED GAS, N.O.S. (PENTAFLUOROETHANE, DIFLUOROMETHANE)
Class	:	2
Classification Code	:	2A
Hazard Identification Number	:	20
ADR/RID-Labels	:	2.2
Environmentally hazardous	:	no

IATA

UN Number	:	3163
Description of the goods	:	Liquefied gas, n.o.s. (Pentafluoroethane, Difluoromethane)
Class	:	2.2
Hazard Labels	:	2.2

IMDG

UN Number	:	3163
Description of the goods	:	LIQUEFIED GAS, N.O.S. (PENTAFLUOROETHANE, DIFLUOROMETHANE)
Class	:	2.2
Hazard Labels	:	2.2
EmS Number	:	F-C, S-V

Marine pollutant : no

15. REGULATORY INFORMATION

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

Other inventory information

US. Toxic Substances Control Act	:	On TSCA Inventory
Australia. Industrial Chemical (Notification and Assessment) Act	:	On the inventory, or in compliance with the inventory
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	:	All components of this product are on the Canadian DSL.
Japan. Kashin-Hou Law List	:	On the inventory, or in compliance with the inventory
Korea. Toxic Chemical Control Law (TCCL) List	:	On the inventory, or in compliance with the inventory
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	:	On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances	:	On the inventory, or in compliance with the inventory
NZIOC - New Zealand	:	On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment

Chemical safety assessment	:	Chemical Safety Assessments have been carried out for these substances.

16. OTHER INFORMATION

Text of R-phrases and H-statements referred to under heading 3

Difluoromethane	:	H220	Extremely flammable gas.
		H280	Contains gas under pressure; may explode if heated.
		R12	Extremely flammable.
Pentafluoroethane	:	H280	Contains gas under pressure; may explode if heated.

Further information

All directives and regulations refer to amended versions.
Vertical lines in the left hand margin indicate an amendment from the previous version.

Abbreviations:
EC European Community
CAS Chemical Abstracts Service

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