Material Safety Data Sheet

1. IDENTIFICATION OF THE SUNSTANCE/PREPARATION AND COMPANY/UNDERTAKING

PRODUCT NAME: Raki® R407c

Address/Phone No.: AL SHAMLY TRADING FZE

JEBEL ALI – DUBAI U.A.E.

Emergency Phone No: 00971-4-2286643

Subject to member state regulation, applicable uses are: refrigerant

2. COMPOSITION/INFORMATION ON INGREDIENTS

EC No.: 200-839-4 HFC 32, 206-557-8 HFC 125, 212-377-0 HFC 134A

HAZARDOUS INGREDIENT(S)	CAS No.	%(w/w)	Symbol	R Phrases
Difluoromethane (HFC 32)	000075-10-5	23	F+	R12
Pentafluoroethane (HFC 125)	000354-33-6	25		
1,1,1,2-tetrafluoroethane (HFC 134a)	000811-97-2			

3. HAZARDS IDENTIFICATION

Low acute toxicity. High exposures may cause an abnormal heart rhythm and prove suddenly fatal. Very high atmospheric concentration may cause anesthetic effects and asphyxiation.
Liquid splashed or spray may cause freeze burns to skin and eyes.

4. FIRST –AID MEASURES

The first aid advice given for skin contact, eye contact, and ingestion is applicable following exposures to the liquid or spray. See also section 11.

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.

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.

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

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

Further Medical Treatment

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.

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5. FIRE-FIGHTING MEASURES

This refrigerant is not flammable in air under ambient conditions of temperature and pressure. Certain mixtures of this refrigerant and air when under pressure may be flammable. Mixtures of this refrigerant and air under pressure should be avoided.

Certain mixture HFC and chlorine may be flammable or reactive under certain conditions.
Thermal decomposition will evolve very toxic and corrosive vapours.(hydrogen fluoride)
Containers may burst if overheated.

Extinguishing Media: As appropriate for surrounding fire. Water spray should be used to cool containers. Fire Fighting Protective Equipment: A self-contained breathing apparatus and full protective clothing must be worn in fire conditions. See also section 8.

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6. ACCIDENTAL RELEASE MEASURES

Ensure suitable personal protection (including respiratory protection) during removal of spillages. See also Section 8.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 are. Contain spillages with sand or any suitable adsorbent material. Prevent liquid from entering drains, sewers, basements and workpits since the vapour may create a suffocating atmosphere.

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7. HANDLING AND STORAGE

7.1. HANDLING

Avoid inhalation or high concentration 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 vapour is heavier than air, high concentration 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 vapour phase.

Process Hazards

Liquid refrigerant transfers between refrigerant containers and to and from systems can result in static generation. Ensure adequate earthing.
Certain mixtures of HFCs and chlorine maybe flammable or reactive under certain conditions.

7.2 STORAGE

Keep in a well ventilated place away from the 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 (Deg C) <45

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8. EXPOSURE CONTROL/PERSONAL PROTECTION

Wear suitable protective clothing, gloves and eye/face protection. Wear thermal insulating gloves when handling liquefied gases. In case of insufficient ventilation, where exposure to high concentration of vapour is possible, suitable respiratory protective equipment with positive air supply should be used.

Occupational Exposure Limits

HAZARDOUS	LTEL 8hr	LTEL 8hr	STEL	STEL	Notes
Notes					
Difluoroemethane(HFC 32)	1000				COM
Pentafluoroemethane (HFC 125)	1000				COM
1,1,1,2-tetrafluoroemethane (HFC134a)	1000	4240			OES

9.PHYSICAL AND CHEMICAL PROPERTIES

Form: Liquefied gas

Colour: Colourless

Odour: Slight ethereal

Boiling Point (Deg C): -44.3 to -37.1(boiling range)
Vapour Pressure (mm Hg): 7810 at 20 Deg C
Density (g/ml): 1.16 at 20 Deg C
Solubility(Water) insoluble

Solubility (other): soluble in: chlorinated solvents, alcohols, ester
Vapour Density (Air=1): 3.0 at bubble point temperature

10.STABILITY AND REACTIVITY

Hazardous Reactions: Certain mixtures of HFCs and chlorine maybe flammable or reactive under certain conditions.
Incompatible materials:finely divided metals,magnesium and alloys containing more than 2% magnesium.
Can react violently if in contact wilth alkali metals and alkaline earth metals, sodium,potassium,barium.

Hazardous Decomposition Products(s): hydrogen fluoride by thermal decomposition and hydrolysis.

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11. TOXICOLOGICAL INFORMATION

Inhalation

High exposures may cause an abnormal heart rhythm and prove suddenly fatal.vey high atmospheric concentration may cause anesthetic effects and asphyxiation.

Skin Contact

Liquid splashes or spray may cause freeze burns. Unlikely to be hazardous by skin absorption.

Eye Contact

Liquid splashes or spray may cause freeze burns.

Ingestion

Highly unlikely-but should this occur freeze burns will result.

Long Term Exposure

HFC32 : An inhalation study in animals has shown that repeated exposures produce no significant effects(49500ppm in rats).
HFC125: An inhalation study in animals has shown that repeated exposures produce no significant effects(50000ppm in rats).
HFC125: A lifetime study in rats has shown that exposure to 50000ppm resulted in benign tumours of the testis.The increased tumour incidence was observed only after prolonged exposure to high levels, and is considered not to be of relevance to humans occupationally exposed to HFC 134a at or below the occupational exposure limit.

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12. ECOLOGICAL INFORMATION

Environmental fate and Distribution

High tonnage material produced in wholly contained systems. High tonnage material used in open systems.Vapour.

Persistence and Degradation

HFC32: Decomposed comparatively rapidly in the lower atmosphere(troposphere)Atmospheric lifetime in 5.6 year(s).
Has a Global Warming Potential(GWP) of 650(relative to a value of 1 for carbon dioxide at 100 years).
HFC 125: Decomposed slowly in the lower atmosphere(troposphere).Atmospheric lifetime in 32.6 year(s).
Has a Global Warming Potential(GWP) of 2800(relative to a value of 1 for carbon dioxide at 100 years).
HFC 134a: Decomposed comparatively rapidly in the lower atmosphere(troposphere).Atmospheric lifetime is 13.6 year(s).
Has a Global Warming Potential(GWP) of 1300(relative to a value of 1 for carbon dioxide at 100 years).
HFC 32, HFC 125, HFC 134a: Do not influence photochemical smog (i.e they are not VOCs under the term of the UNECE agreement).Do not deplete ozone.

Effect on effluent Treatment

Discharges of the product will enter the atmosphere and will not result in long term aqueous contamination.

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13. DISPOSAL CONSIDERATIONS

Best to recover and recycle. If this is not possible, destruction is to be in an approved facility which is equipped to absorb and neutralize acid gases and other toxic processing products.

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14. TRANSPORT INFORMATION

UN No.:	3340
AIR	
ICAO/IATA	
-primary:	2.2
SEA	
IMDG	
-primary	2.2
Marine Pollutant:	Not classified as a Marine Pollutant
Proper Shipping Name:	REFRIGERANT GAS R407C
ROAD/RAIL	
ADR/RID Class:	2
ADR Sin:	3340

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15. REGULATORY INFORMATION

Not Classified as Hazardous to users.

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16. OTHER INFORMATION

This data sheet was prepared in accordance with directive 2001/58/EC.

The following sections contain revision or new statements: 1, 12, 14, 16.

Information in this publication is believe to be accurate and is given in good faith, but it is for the customer to satisfy itself of the suitability for its own particular purpose. Accordingly, AL SHAMLY TRADING FZE. Gives no warranty as to the fitness of the product for any particular purpose any implied warranty or condition (Statutory or otherwise) is excluded except to the extent that such exclusion is prevented by law. Freedom under patent, copyright and Designs cannot be assumed.