



# KUGESI

DISTRIBUTORS OF REFRIGERANT

## MATERIAL DATA SAFETY SHEET

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Date: 1<sup>st</sup> September 2008

### 1) Product and company identification

PRODUCT NAME: Refrigerant Gas 406A  
SUPPLIER DETAILS: Kugesí Refrigerants (Pty) Ltd  
8 Benetton Street  
Racing Park  
Killarney  
Cape Town, ZA  
Tel: +27 21 556 2652  
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### 2) Composition/Information on ingredients

Chemical nature: Halogenated Hydrocarbon Mixture  
Hazardous Constituents: 1-Chloro-1,1-difluoroethane 41%  
Chlorodifluoromethane 55%  
Isobutane 4%

### 3) Hazards identification

*Adverse human health effects:* Liquefied gas, contact of liquid may cause frostbite and injury to the Cornea. High exposures may cause an abnormal heart rhythm and prove fatal. Very high atmospheric concentrations may cause anaesthetic effects and asphyxiation. Liquid splashes may cause freeze burn to the skin and eyes.

*Physical and Chemical hazards:* Heating will cause a rise in pressure and risk of bursting. On combustion toxic gasses are released.

### 4) First Aid Measures

*Inhalation:* Move the affected person away from the contaminated area and into fresh air. Keep the person warm and at rest. Administer oxygen if necessary. If breathing stops give artificial respiration. In the event of cardiac arrest apply external cardiac massage. Call a doctor immediately.

*Skin Contact:* Contact of liquid with Skin: Immediately rinse plenty of water to thaw the

affected area. Immediately remove contaminated clothing or footwear. Clothing may adhere to the skin, if it sticks do not pull it off. Cover affected area with sterile dressing. If irritation or blistering occur seek immediate medical attention.

*Eye Contact:* Contact of liquid with eyes: rinse with water whilst keeping the eyes wide open irrigate for at least 10 minutes. Consult an eye specialist immediately.

*Ingestion:* This is an unlikely route of exposure. If exposure takes place do not induce vomiting. Providing the patient is conscious, wash out the mouth with water and give 200-300ml of water to drink. Obtain immediate medical attention as ingestion will cause freeze burns.

*Note to the physician:* Avoid administering adrenaline or any other similar products as cardiac arrhythmia may result with possible subsequent cardiac arrest.

## 5) Fire- Fighting Measures

*Extinguishing Media:* All extinguishing agents can be used.

*Specific Hazards:* 406A is not flammable under ambient conditions of temperature and pressure. Thermal decomposition will evolve very toxic and corrosive vapours.

*Specific Fire Fighting Methods:* Stay upwind. Evacuate the personnel away from the fumes. Cool down the containers/ equipment exposed to heat with water spray.

*Protection of the Fire Fighters:* Self Contained breathing apparatus and full protective clothing must be worn in fire conditions.

## 6) Accidental Release Measures

*Personal Precautions:* Avoid contact with skin and eyes, Do not breathe gas. No naked Flames. Do not smoke. For further information refer to section 8 "exposure controls/personal protection".

Heavy vapours, shut off low level openings in the vicinity( ventilation shafts, drains) prevent the product from entering cellars, basements, or pits since the vapour may create a suffocating atmosphere. 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 spillage area, contain spillage with earth or sand or any suitable absorbent material.

*Environmental Precautions:* Contain the spilled material, prevent the product from spreading into the environment.

*Methods of cleaning up:* Recover as much product as possible, allow residual product to evaporate for disposal of contaminated material refer to section 13.

## 7) Handling and Storage

### **Handling**

*Technical Measures:* Ventilation is required, Use Closed systems. Avoid contact with hot surfaces. Avoid High temperatures. Smoking is forbidden. Avoid inhalation of high concentrations of vapours.

Atmospheric levels should be controlled in compliance with occupational exposure limit. The vapour 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 as corrosive and very toxic decomposition products can be formed. Avoid contact between the liquid and skin and eyes.

Liquid transfer of refrigerants between refrigerant containers and to and from systems can result in static generation, ensure adequate earthing to avoid this.

### **Storage**

*Technical measures:* storage area should be equipped with ventilation at low level, Take necessary measures to avoid the accidental release of the product outside, due to rupture of containers or transfer systems.

*Storage conditions:* Keep the containers tightly closed and dry in a cool and well ventilated area at temperatures not exceeding 45C and away from any source of heat including direct sun light. Avoid storing near to the intake of air conditioning units, boiler units or open drains and away from any source of Ignition

*Packaging material:* Steel is recommended.

## 8) Exposure Controls/ Personal Protection

*Engineering measures:* Ensure good ventilation of the work station

*Occupational exposure limits:* Exposure limits LTEL 1,000ppm 8 hr TWA not established

*Personal Protective Equipment:* In event of insufficient ventilation self contained apparatus is required. Refrigerants should only be handled with the use of protective gloves insulated against the cold. Eyes should be protected with goggles and to protect the skin and body Impermeable clothing should be worn. Do not drink, eat or smoke in the workplace.

## 9) Physical and Chemical Properties

### **Appearance**

Physical State is compressed Liquefied gas, colourless with a slight ethereal odour.

*Specific temperatures:* Boiling Point -23 to – 23 at 101.3KPa, melting point 158 C

*Oxidising properties:* Non oxidising material according to EEC criteria

*Vapour Pressure (mm Hg):* 5.62 bar at 20°C, 12.45 bar at 50C

*Vapour density: (Air=1)>3*

*Specific Gravity:* 1.13 Kg/l

*Liquid density:* 1.205Kg/l at 25°C

*Solubility in water:* Negligible

## 10) Stability and Reactivity

**Stability:** Stable at ambient temperature and under normal conditions of use

**Conditions to Avoid:** May decompose on contact with hot surfaces and flames incompatible with Alkali metals, sodium, Potassium, Barium, Magnesium, alloys and powdered metals.

Hazardous decomposition products: On Combustion or thermal decomposition (Pyrolysis) and Hydrolysis releases toxic gasses (halogenated compounds) (Hydrogen Chloride and hydrogen Fluoride)

## 11) Toxicological Information

**Acute Toxicity:** Vapours: Published data

**Acute Symptoms:** Effects following high level exposure: Headaches, Dizziness, Loss of Consciousness

**Inhalation:** High exposures may cause abnormal heart rhythm and prove suddenly fatal. Very high atmospheric concentrations may cause anaesthetic effects and asphyxiation,

**Skin Contact & Eye Contact:** Liquid Splashes or spray may cause freeze burns unlikely to be hazardous through skin absorption.

**Ingestion:** Highly unlikely but should this occur freeze burns will result

## 12) Ecological Information

**Behaviour in the environment:** High tonnage material produced in wholly contained systems. High tonnage material used in open systems. Vapour

**Mobility:** Product is Volatile when in aqueous solution

***Persistence/Degradability:*** No information available

***Bioaccumulation:*** Non Bioaccumulative

***Destination of Product:*** AIR

### 13) Disposal Considerations

***Waste from Residues:*** Do not allow the product to be released into the environment, Consult the manufacturer or supplier for information regarding recovery and recycling of the product, if recovery is not possible Incinerate at a licensed installation.

***Contaminated Packaging:*** Degas , Reusable containers return to supplier Disposable containers dispose of at an authorised land fill site.

The users attention is drawn to the possible existence of local regulations regarding disposal.

### 14) Transport Information

***Road and Rail Transport:***

Un No. 1018

ERG No 126

Hazchem warning 2 C Non Flammable Gas

***Sea Transportation:***

IMDG 1018

Class 2.2

Label Non-flammable gas

***Air Transportation:***

ICAO/IATA code 1018

Class 2.2

***Packaging instructions***

- Cargo 200

- Passenger 200

***Maximum quantity allowed***

- Cargo 150 kg

- Passenger 75 kg

### **15) Regulatory Information**

EEC Hazard class Non-flammable gas  
Risk phrases R20 Harmful by inhalation  
R34 Liquid phase could cause burns  
R44 Risk of explosion when heated under

#### **Confinement**

Safety phrases S9 Keep container in a well-ventilated place  
S15 Keep away from heat  
S23 Do not breathe the gas.  
S36 Wear suitable protective clothing  
S41 In case of fire/explosion do not breathe

#### **Fumes**

S51 Use only in well ventilated areas  
S56 Do not discharge into the environment.  
Dispose to an authorised waste collection point  
National legislation None  
Refer to SABS 0265 for explanation of the above.

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