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SAFETY DATA SHEET

Product: REFRIGERANT 22 Page: 1/5
 Version: 1.01 Date: 19/11/95

01 - IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

PRODUCT NAME REFRIGERANT 22
SUPPLIER HRP REFRIGERANTS LIMITED
 GELLIHIRION INDUSTRIAL ESTATE
 PONTYPRIDD
 MID GLAMORGAN, CF37 5SX
 UNITED KINGDOM
 Telephone: 44 1443 842255
 Fax: 44 1443 841805

02 - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME OF THE SUBSTANCE CHLORODIFLUOROMETHANE
GENERIC NAME HALOGENATED HYDROCARBON
CAS 75-45-6
EINECS 200-871-9

03 - HAZARDS IDENTIFICATION

MOST IMPORTANT HAZARDS -
HEALTH EFFECTS Practically non harmful
PHYSICAL AND CHEMICAL HAZARDS Thermal decomposition giving toxic and corrosive products
SPECIFIC HAZARDS/EEC Dangerous to the ozone layer

04 - FIRST AID MEASURES

INHALATION Move to fresh air
 Oxygen or artificial respiration if needed
SKIN CONTACT Frostbite: treat as thermal burns
EYE CONTACT Wash immediatcly, abundantly and thoroughly with water
 If irritation persists, consult an ophthalmologist

05 - FIRE-FIGHTING MEASURES

SPECIFIC HAZARDS Thermal decomposition into chlorinated and fluorinated toxic and corrosive products:
 Hydrogen fluoride
 Hydrogen chloride
 Phosgene

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Oxides of carbon

SPECIFIC METHODS

Cool containers/tanks with water spray
Prohibit all sources of sparks and ignition - Do not smoke

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Wear self-contained breathing apparatus and protective suit

06 - ACCIDENTAL RELEASE MEASURES

PERSONAL PROTECTION

Avoid contact with skin and eyes and inhalation of vapours
Wear personal protective equipment
In enclosed areas: ventilate or wear self-contained breathing apparatus (risk of anoxia)
Remove all sources of ignition
Do not smoke

07 - HANDLING AND STORAGE

HANDLING

Technical measures/Precautions

-
Storage and handling precautions applicable to products:
LIQUEFIED GAS UNDER PRESSURE
Provide for appropriate exhaust ventilation at machinery

Safe handling advice

Avoid ignition sources and contact with hot surfaces - DO NOT SMOKE

STORAGE

Technical measures/Storage conditions

-
Store at room temperature in the original container
Keep away from naked flames, hot surfaces and sources of ignition
Keep in a cool, well ventilated place
Protect full containers from sources of heat to avoid over-pressurisation

PACKAGING MATERIALS

Recommended

-
Ordinary steel

Prohibited

Alloys containing more than 2% of magnesium
Plastic materials

08 - EXPOSURE CONTROLS/PERSONAL PROTECTION

PROTECTIVE PROVISIONS

Provide sufficient air exchange and/or exhaust in work areas

CONTROL PARAMETERS

-

Exposure limits

UK HSE EH40/95:
REFRIGERANT 22:
Long-term exposure limit (8-hour TWA reference period) = 1000 ppm, 3500 mg/m³

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PERSONAL PROTECTION EQUIPMENT

Respiratory protection	-
Hand protection	In case of insufficient ventilation wear suitable respiratory equipment
Eye protection	Gloves
Specific hygiene measures	Safety glasses
	Avoid contact with skin and eyes and inhalation of vapours
	Do not smoke

09 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE (20°C)	liquefied gas
COLOUR	colourless
ODOUR	ether-like (slightly)
pH	not applicable
BOILING POINT/RANGE	-40.8°C
FLASH POINT	No flash point (in the test conditions)
VAPOUR PRESSURE	(20°C): 0.91 MPa (9.1 bar) (50°C): 1.94 MPa (19.4 bar)
VAPOUR DENSITY	(20°C): 3.57 kg/m ³
DENSITY	(20°C): 1213 kg/m ³ (50°C): 1085 kg/m ³
SOLUBILITY	Soluble in hydrocarbons and chlorinated solvents, alcohols, ketones and esters. Solubility of product in water at 30°C = 0.15% by weight
PARTITION COEFFICIENT	log P _{ow} = 1.08
OTHER DATA	Critical temperature: T _c = 96.1°C Critical pressure: P _c = 4.99 MPa (49.9 bar)

10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID	Keep away from heat and sources of ignition Avoid contact with flames and red hot metallic surfaces
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HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition into chlorinated and fluorinated toxic and corrosive products:

Hydrogen fluoride (hydrofluoric acid)

Hydrogen chloride gas

Phosgene

Oxides of carbon

FURTHER INFORMATION

The product is stable under normal handling and storage conditions

11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Inhalation

-
Effects of breathing high concentrations may include:
Headache, sleepiness, dizziness

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Like other volatile aliphatic halogenated compounds the product can be carried by accumulation of vapours and/or inhalation in large quantities:
Loss of consciousness and cardiac disorders aggravated by stress and lack of oxygen: risk of mortality:

Experimental effects on animals:
Practically not harmful by inhalation
No effect observed at concentrations below 50 000 ppm

LOCAL EFFECTS

Skin-contact -
Ejection of liquefied gas: frostbite possible

Eye-contact Transitory irritation

12 - ECOLOGICAL INFORMATION

MOBILITY Rapid evaporation: half-life time $t_{1/2}$ = 2.7 hours

PERSISTENCE/DEGRADABILITY -

In water Not readily biodegradable: 0% after 28 days

In air Degradation in the atmosphere: half-life time $t_{1/2}$ = 14 years
Ozone depletion potential: ODP (R-11 = 1.0) = 0.055
Halocarbon global warming potential: HGWP (R-11 = 1.0) = 0.36

In soils and sediments Slight adsorption: $\log K_{oc}$ = 1.8

BIOACCUMULATION Practically not bioaccumulable: $\log P_{ow}$ = 1.08

ECOTOXICITY -

AQUATIC TOXICITY -

Acute toxicity Fish: toxicity threshold, 24 hours = 180 mg/l
Bacteria under anaerobic conditions: toxicity threshold, 24 hours > 400 mg/l

13 - DISPOSAL CONSIDERATIONS

DISPOSAL OF PACKAGING Return all sized containers to supplier
DISPOSAL OF PRODUCT Recycle or incinerate at an approved site only

14 - TRANSPORT INFORMATION

CONSULT HRPR FOR FURTHER INFORMATION

UN Number 1018
ADR/RID Class: 2
Prescriptions Item (letter): 3^a
Labels: 2
IMDG H.I. Nr/U.N. Nr: 20/1018
Class: 2.2
Prescriptions UN Nr (IMDG): 1018
Labels: NON FLAMMABLE GAS/2

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IATA

Class: 2.2

Prescriptions

UN Nr (IATA) or ID Nr: 1018
Labels: NON FLAMMABLE GAS/2

15 - REGULATORY INFORMATION

EEC DIRECTIVE

-

SAFETY DATA SHEETS

D.91/155/EEC amended by D.93/112/EEC: Dangerous substances and preparations

EEC CLASSIFICATION/LABELLING
HAZARDOUS SUBSTANCES

-

D.67/548/EEC amended by D.93/21/EEC (18th ATP)

R59 Dangerous for the ozone layer
S59 Refer to manufacturer/supplier for information on recovery/recycling
S61 Avoid release to the environment. Refer to special instructions/safety data sheet

EEC No. (EINECS)

200-871-9

BRITISH REGULATION
SAFETY DATA SHEET
CLASSIFICATION/LABELLING

-

CHIP2: Chemicals (Hazard Information and Packaging for Supply) Regulations 1994, SI No. 3247

16 - OTHER INFORMATION

RECOMMENDED USES

Refrigerant

BIBLIOGRAPHY REFERENCES

Encyclopédie des gaz (Air Liquide - Ed. 1976 - Elsevier Amsterdam)
Fiche toxicologique INRS: No. 142 chlorodifluoromethane

NOTE

This information contained within this safety data sheet applies only to the HRPR product to which it relates. The information provided is based upon our best knowledge at the time that this safety data sheet was published.

The information is believed to be accurate and is given in all good faith.

When used in other preparations, in formulations or in mixtures, it is necessary to ascertain if the classification of the hazards have changed. The attention of users is drawn to the possibility of creating other hazards when the product is used for purposes other than that for which it is recommended. In such cases a complete reassessment should be made by user.

This safety data sheet should only be used and reproduced in order that the necessary measures may be taken relating to the protection of health and safety at work and relating to the protection of environment.

The reference to the legislative, regulatory and codes of practice documents must not be considered as exhaustive.

It is the responsibility of handlers of the product to pass on the totality of the information contained within this document to any subsequent persons who will come into contact with, handle or use the product in any way.

They should check the adequacy of the information contained in the safety data sheet received before passing it onto their customers.

End of document

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