
Material Safety Data Sheet

(REFRIGERANTS R22)

MANUFACTURER:

ZHEJIANG QUHUA FLUOR-CHEMISTRY CO.,LTD.

1.

Data concerning producers

ZHEJIANG JUHUA GROUP I/E CO.,LTD.

Emergency telephone number

0086-570-3094675

Identification of the substance or the preparation

Product name

-R22

Chemical name

-Chlorodifluoromethane

Synonym(s)

-HCFC-22

-ERA-22

-R22

Formula:CHCLF₂

Molecular Weight: 86.5

BC Number (BINBES): 200-871-9

2.

-Chlorodifluoromethane

Concentration :>=99.8%

CAS Number :75-45-6

BC Number (BINECS) : 200-871-9

Phrases R :59

3.

- Gas (liquefied).
- Presents little hazard to human health.
- In case of decomposition releases dangerous products.

4.

Effects

Inhalation

- At high concentration, risk of narcosis.
- At high concentration, risk of cardiac arrhythmia
- At high concentration, risk of asphyxia by lack of oxygen

Eyes contact

- (gas)
- Negligible
- Severe eye irritation, watering, redness and swelling of the eyelids.

Risk of burns (frostbite)

Skin contact

- (gas)
- Negligible
- (liquefied gas)
- Cold sensation followed by redness of the skin.
- risk of frostbite

Ingestion

- impossible risk (gas)

First aid

Inhalation

- Remove the subject from the contaminated area
- Oxygen or cardiopulmonary resuscitation if necessary
- Consult with a physician in case of respiratory and nervous symptoms

Eyes contact

- Keep eyelids open to allow evaporation of product
- Flush eyes with running water for several minutes, while keeping the eyelids

wide open.

- Consult with an ophthalmologist in case of persistent pain.

Skin contact

- Allow product to evaporate
- Rinse with lukewarm running water.
- Consult with a physician in case of persistent pain or redness.

Ingestion

General recommendations

- Risk not possible (gas)

If the subject is completely conscious:

- Negligible

If the subject is unconscious:

- Not applicable

Medical treatment

General information

- Do not give adenergetic drugs

Inhalation

- Negligible

Eyes contact

- On the advice of the ophthalmologist.

Skin contact

- Usual treatment for burns.

Ingestion

- Negligible

5.

Common extinguishing means

-In case of fire in close proximity, all means of extinguishing are acceptable (subject to section below).

Inappropriate extinguishing means

- No restriction

Specific hazards

- Non-flammable (see section 9)
- Formation of dangerous gas/vapors in case of decomposition (see section

10)

-Gas/vapors combustion possible in presence of air in very particular conditions (see section 9 and/or consult the producer)

Protective measures in case of intervention

- Evacuate all non-essential personnel.
- Wear self contained breathing apparatus when in close proximity or in confined spaces.
- When intervention in close proximity wear full protective acid resistance suit..
- After intervention, proceed to clean the equipment (take a shower, remove clothing carefully, clean and check).
- Intervention only by capable personnel who are trained and aware of the hazards of the product.

Other precautions

- If safe to do so, remove the exposed containers, or cool with large quantities of water.
- Stay an safe distance in a protected location sheltered from possible projectiles.
- Never approach containers which have been exposed to fire, without cooling them sufficiently.
- As for any fires, ventilate and clean the rooms before re-entry.

6.

Precautions

- Follow the protective measures given in section 8.
- Ventilate the premises.
- If safes to do so, without over exposing anyone, try to stop the leak.
- Keep away materials and products, which are incompatible with the product (see section 10)
- In case of leaking container, try to reposition it to get the leak in gaseous phase.
- Gas/vapors heavier than air may accumulate in confined spaces, causing possible oxygen depletion.

Cleanup methods

- Let the products evaporate.
- Prevent the products from entering sewers or confined places.

Precautions for protection of the environment

- Prevent discharges into the environment.(atmosphere,...)

7.

Handling

- Carry out all operations in closed piping circuits and equipment.
- Operate in a well-ventilated area.
- Prevent product vapors decomposition form contacting hot spots.
- Use only equipment materials which are compatible with the product.
- Keep away from reactive products (see section 10).

Storage

- Keep in a hermetically sealed container.
- In a ventilated, cool area.
- Keep away from heat sources.
- Keep away from reactive products (see section 10).

Other precautions

- Follow the protective measures given in section 8.

Packing

- Steel

8.

Engineering controls

- Provide local ventilation suitable for the emission risk.
- Install the means with respect to the authorized limit values.
- Follow the protective measures given in section 7.

Respiratory protection

- Minimum need if the local exhaust ventilation is adequate.
- In case of decomposition, self-contained breathing apparatus.
- Self-contained breathing apparatus in medium confinement/insufficient.

Oxygen/in case of large uncontrolled emissions /in all circumstances when the mask

and cartridge do not give adequate protection.

-Use only respiratory protection that conforms to international/national standards.

Hand protection

- Protective gloves-chemical resistant

-Recommended materials: Polyvinylalcohol

Eye protection

-Wear protective goggles for all industrial operations.

-If risk of splashing, chemical proof goggles/face shield.

Skin protection

-Apron/boots of neoprene if risk of splashing.

Other precautions

-Shower and eye wash stations.

-Gloves, overalls and boots have to be double layered (protection against cold temperature.

-Consult your industrial hygienist or safety manager for the selection of personal protective equipment suitable for the working conditions.

9.

Appearance : pressurized liquefied gas.

Color/Color : colorless/colorless

Odor/Color: slightly ethereal.

Change of state

-freezing point

=-160 °C

-boiling point/range

=-40.8 °C

Flash point

-Negligible

Flammability

-No flammability limit in air

Remark:

Non flammable gas

Auto-flammability

- 635 °C

Vapor/vapor pressure

- = 9.12 bar

temperature 20 °C

- = 19.56 bar

temperature 50 °C

Density

- Specific gravity (D 20/4)

= 1.22

Vapor/vapor density (air=1)

- = 3.65

temperature 20 °C

Solubility

-Slightly soluble in:

- Water

=0.3% weight

temperature 25 °C

Remark:

Pressure =1 bar

-Soluble in

Most organic solvents

PH

-Neutral

Partition coefficient p(n-octanol/water)

-Log P o/w =1.08

Viscosity

-Dynamic viscosity (liquid)

=0.196 m Pa.s

temperature 25 °C

Decomposition temperature

-No data

Danger of explosion

-Remark:

see also section 10

Oxidizing properties

-Non oxidizer

Other data

- Critical temperature
=96 °C
- Critical pressure
=49.8 bar

10.

Stability

- Stable under certain conditions (see below).
- Decomposition produces dangerous gases, upon contact with flames or hot

metallic surfaces.

Conditions to avoid

- Heat/Sources of heat

Materials to avoid

- Metallic powders
- Alkaline earth metals
- Alkaline metals and their alloys

Hazardous decomposition products

- Hydrogen fluoride
- Hydrochloric acid.
- Phosgene
- Fluorophosgene

Other information

- Contact with strong bases or alkaline materials may provoke violent reaction or explosions.

11.

Irritation

- Rabbit, slightly irritant (skin)
- Rabbit, slightly irritant (eyes)

Sensitization

- Guinea Pig, Non sensitizing (skin).

Chronic toxicity

- Inhalation, after a single exposure, dog, >=5% v/v air, cardiac sensitization following adrenergic stimulation.

- Inhalation, after prolonged exposure, rat, Target organ: salivary glands, 5% v/v air, carcinogenic effect.
- No carcinogenic effect.
- Inhalation, rat, Target organ: eyes, 5 % v/v air, teratogenic effect, High dose.
- Inhalation, after prolonged exposure, mouse, no carcinogenic effect.
- Inhalation, after prolonged exposure, rat, no carcinogenic effect.

Comments

- Not hazardous in normal conditions of handling and use.

12.

Waste treatment

- Dispose in compliance with local/federal and national regulations.
- It is recommended to contact the producer for recycling/recovery.

Packaging treatment

- To avoid treatment, as far as possible, use dedicated containers.

13.

UN Number: 1018

DATA Class: 2.2

Hazard Label: NON FLAMMABLE GAS

PSN

CHLORODIFLUOROMETHANE

IMDG Class: 2.2

Hazard Label: COMPRESSED GAS NON FLAMMABLE

Placard: 1018

MFAG: 350

E-S: 2-09

IMDG Name:

CHLORODIFLUOROMETHANE

ADR/ADNR Class: 2,2 °A
Hazard Label: 2
Placard: 20/1018
ADR/RID Name:
CHLORODIFLUOROMETHANE

RID Class: 2,2 °A
Hazard Label: 2 + 13
Placard: 20/1018
ADR/RID Name:
CHLORODIFLUOROMETHANE

14.

EEC Labeling

- Hazardous substance name
- Chlorodifluoromethane

-Not dangerous according to Dir. 92/32/EEC.

-Labeling following Dir. 93/21/EEC – Section 5.2.2.2

Phrases R

59 Dangerous for the alone layer.

15.

Reason for update

- Update:
- section 1 – 16