

## ZHEJIANG QUHUA FLUOR-CHEMISTRY CO., LTD

### Chemical safety data sheet of Chlorodifluoromethane

#### Part1 chemical and Enterprise logo

Name: Refrigerant 22 or R22

Chemical name: Chlorodifluoromethane

Enterprise name: ZHEJIANG QUHUA FLUOR-CHEMISTRY CO., LTD

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Code of chemical safety data sheet: **CSDS/FH 05—2002**

Effective date: 1 January 2016

National emergency telephone: 0532-3889090; 0532-3889191

#### Part 2 Component/ingredient Information

Pure or mixture: purity

Name of chemical: Chlorodifluoromethane

Hazardous element	content	CAS No:
Chlorodifluoromethane	99.5%	75-45-6

#### Part 3 Description of hazard

Risk categories: 2.2 category of inflammable gas

Route of entry: inhalation, ingestion.

Health hazards: This product is of low toxicity. It has anaesthesia effect, if exposed to high concentration will cause hypoxia-induced asphyxia, heart, liver damage. During the procedure of preparing tetrafluoroethylene, the released decomposed gas is poisonous, can cause poisoning. If skin or eye contacts with liquid products, can cause frostbite damage.

Environmental hazards: The product has highly destructive force to destroy ozone layer.

Flammable and explosive hazards: The product is not flammable, if contact with high temperature, the pressure within container will increase with the possibility of rupture and explosion

## Part 4 Emergency Measure

Skin contact: strip contaminated clothing, use soap and clean water to wash skin thoroughly, at least 15 minutes. For frostbite, seek medical treatment.

Eye contact: Lift up eyelids, wash with use running or saline water. Seek medical treatment.

Respiration: Evacuate rapidly from the operation area to fresh air. Keep the respiration airway open. If breathing is difficult, execute oxygen therapy. If breathing stop, execute artificial respiration, after that, seek medical treatment.

Ingestion: drink enough warm water to force vomit, seek medical treatment

## Part 5 Fire fighting measure

Hazard property: If in high temperature, the pressure in the container will increase with possibility of rupture or explosion

Hazardous product of combustion: Carbon monoxide, hydrogen fluoride.

Extinguishing method: This product itself is not flammable. Cut off gas resource. Spill water to cool off container, remove container to open place if possible.

Recommended extinguishing agent: Foggy water, foam, carbon dioxide

Attention and measure: Wear protective clothes and self-contained positive pressure ventilator, extinguish fire at upwind place.

## Part 6 Anti-leak Emergency Management

Emergency treatment method: Evacuate person from contaminated area to fresh air, quarantine, strict on access. It is suggested that emergency personnel wear positive self-contained breathing apparatus and protective clothes. Cut off the source of leakage, remove the leaked container to ventilated area. The leaked container should be carefully handled and repaired, reuse after testing.

Elimination: Properly ventilated, accelerate proliferation. Execute at earliest opportunity.

## Part 7 Handling and storage

Handling: Operate in enclosed area with sufficient ventilation. Operators should be specially trained, and rigorously observe the regulation of operation procedure. If the concentration exceeds the standard, operator should wear self-contained breathing apparatus protective goggle to prevent gas leak to the air. When pack or unpack this product, pay attention not to damage cylinder and accessories which should be

outfitted with anti-leak emergency management equipment.

Storage: This product should be kept in cool and ventilated place. Keep away from fire or heat resource. The temperature in the storage should not surpass 30°C, avoid direct sunshine, store separately from oxide, flammable substance and food chemical, pay special attention not to mix them up. Storage area should be outfitted with anti-leak emergency treatment equipment. When check and accept the product, pay attention to the name of the chemical and the date of testing. Consign the product in the principle of “first in, first out”.

## Part 8 Contract Control /Personnel Protection

Maximum density:

China MAC (mg/m<sup>3</sup>): no information

China PC-TWA (mg/m<sup>3</sup>): 3500

China PC-STEL (mg/m<sup>3</sup>): 5250

Soviet Union MAC (mg/m<sup>3</sup>): 3000

Unite States TLV-TWA: ACGH 1000 ppm, 3450mg/m<sup>3</sup>

Unite States TLV-STEL: no information

Monitoring method: gas chromatography

Engineering control: fully ventilated

Respiration protection: If concentration in the air surpasses the regulatory requirement, wear self-contained breathing apparatus (half mask).

Eye protection: Wear anti-chemical protective glass if necessary.

Body protection: Wear normal protective working clothes.

Hand protection: Wear normal protective goggle.

Other protection: Not inhale high concentration of this product. Before enter into column or limited space or other high concentration area for operation, designate personnel to monitor.

## Part 9 Physical and Chemical property

Appearance and properties: colourless and transparent liquid with a slight scent of ether.

PH value: No information.

Melting point(°C): -146

Boiling point(°C) : -40.8

Relative density (water=1): 1.18

Relative vapour density (air=1):3.0

Saturated vapour pressure (kPa): 13.33(-76.4°C)

Critical temperature (°C): 96

Critical pressure (MPa): 4.91

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Octanol/water logarithm value: 1.08  
Flash point (°C): Not applicable  
Ignitron temperature: Not applicable  
Upper explosive limit [% (V/V)]: Not applicable  
Lower explosive limit [% (V/V)]: Not applicable  
Dissolubility: Dissolvable in water.  
Main application: Used in refrigerant, aerosol pesticide.

## Part 10 Stability and Reactivity

Stability: Stable  
Condition that should be avoided: high temperature  
Forbidden mixture: Strong oxidizer, flammable substance  
Aggregation hazard: Not exist  
Decomposed product: Carbon monoxide, carbon dioxide, hydrogen fluoride.

## Part 11 Toxicology Information

Acute toxicity: LD<sub>50</sub>: 1,000,000 mg/m<sup>3</sup>, 2 hours (inhaled by rats)  
LC<sub>50</sub>: 2400 mg/m<sup>3</sup>, 2 hours (inhaled by mices)  
Subacute and chronic toxicity: Rats and mice inhaled concentration of 0.2%, 6 hours / day, a total of 10 months, No toxicity effect rabbits: 1.4% concentration, weight loss, lowering serum protein, globulin increased. Pulmonary alveolar anatomy see interstitial thickening, pulmonary edema, heart, liver, kidney and nervous system degeneration.  
Irritation: Not available.  
Mutagenicity: microbial mutagenicity: Salmonella 33ppm/24 hours (continuous).  
Particle-induced: Salmonella 33ppm/24 hours (continuous).  
Other: reproductive toxicity: rat inhale poison minimum concentration (TCL<sub>0</sub>) : 50000ppm/5 hours (male 56 days), affects prostate, seminal vesicle, Cowper's glands, glands subsidiary, urethral.

## Part 12 Ecology Information

Biologic toxicity: No information  
Biologic degrade: No information  
Non-biologic degrade: No information

## Part 13 Waste Disposal

Waste property: No information

Waste disposal method: According to national and local laws and regulations relating to the disposal requirements. Or contact manufacturers for recycling.

Attention: Dispose of according to relevant national regulation.

## Part 14 Transportation information

Hazard matter number: 22039

UN number: 1018

Packing marker: Non-flammable gas

Packing category: III class package

Packing method: steel cylinder.

Attention: Fix valve protection caps during the transportation, put steel cylinder flat, the mouth of cylinders toward the same direction, not across; The height should not surpass the protective balustrade of transporting car and firmly secured with triangle wood headlock to prevent rolling. It is forbidden to mix up with food chemical during transportation. In summer, transport at morning or evening, avoid sunshine. Drives by relevant regulation, not park the transportation vehicle at downtown or dense-population area.

## Part 15 Regulation Information

“Hazardous chemical safety management regulation”, The No.334 order of china’s state department, effective date: 15<sup>th</sup>, March, 2002

“The regulation of chemical using in working place” It regulate the using, production, storage, transportation and pack and unpack of hazardous chemical.

In the standard of Label and Marking of Common Hazardous Chemical(GB13690-92), this product is classified as 2.2 category non-flammable gas.

This MSDS is written according to “Regulation of writing chemical safety data sheet”(GB 16843-2000).

## Part 16 Other Information

Reference:

- 1 “Complete chemical hazard safety data sheet”, published by chemical industry publish house, 1997
- 2 “Occupational medicine in China” published by people’s sanitation publish house, 1999
- 3 “Manual of common chemical hazard safety”, published by China petroleum

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- publishing house, 1998
- 4 “Environmental statistic manual of chemical toxicity regulation”, published by China environmental science publishing house, 1992