Chlorodifluoromethane

（R22）

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product name：Chlorodifluoromethane

Company name：Zhejiang Quhua Fluor-Chemistry Co., Ltd.

Address：,Kecheng district, Quzhou, Zhejaing province

Zip：324004

Contact number：0570-3614400

Emergency number：0570-3097819

National fire-fighting number：119

Fax：0570-3098687

E-mail：fhgsb@juhua.com.cn

SDS code：SDS/FH 05-2016

Originally constructed： December, 1997

Revised date：January 1, 2021

Main application：Used as refrigerant, pesticide sprays, fire extinguishing agents and raw materials of fluororesin.

Restricted application：No information

2. HAZARD PROFILE

GHS risk catagory：

Physical hazard	Health hazard	Environment hazard
Pressurized gas：classified as liquefied gas	Severe eye injury/ irritation, category 2B reproductive toxicity, category 1B Specific target organ toxicity –one contact,category 3（anesthesia effect）	Ozone layer hazard, category 1

Label elements and warning instructions：

Hazard Pictogram：

Signal word：DANGER

Hazard statement：It contains pressurized gas, which may explode when heated.Cause eye irritation; May cause harm to fertility or the fetus; May cause drowsiness or dizziness; Destroy ozone in the upper atmosphere, endanger public health and the environment.

[Preventive measures]

- Wash your body thoroughly after work.
- Get special tips before using
- Do not move until you understand all safety precautions.
- Wear protective gloves, protective clothing, protective eye mask and protective mask.
- Do not inhale the product vapor.
- Use only outdoors or in well-ventilated areas

[EMERGENCY RESPONSE]

- If it enters the eye, rinse it with water for a few minutes. If wearing contact lenses and can be easily removed, remove contact lenses.Keep flushing.

- If still feel eye irritation, seek medical advice.
- Seek medical advice in case of contact or doubt.
- If inhaled, remove victim to fresh air and maintain comfortable breathing position.
- If you feel unwell, call a detoxification center or doctor.
- [STORAGE]
- Store in a cool, well-ventilated place. Keep container closed.
- Protect yourself from the sun.
- Lockers must be locked

[DISPOSAL AND TREATMENT]

- Dispose according to national and local regulations, or contact the manufacturer for disposal.
- For information on recovery and recycling, please consult the manufacturer.

Main symptoms: this product is of low toxicity, but after preparation of tetrafluoroethylene it may produce cracked gas which and the residual liquid components are of high toxicity, it may cause acute poisoning. Mild cases include cough, chest tightness, dizziness, fatigue, nausea, etc.The heavy man appears chemical pneumonia or interstitial pulmonary edema; In severe cases, alveolar pulmonary edema and myocardial damage may occurred. There are signs of fibrohyperplasia in the later stage. Animal experiments have shown that difluorochloromethane has anaesthesia and cardiac toxicity. If skin contact with this liquid product, it may cause frostbite.

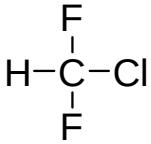
Emergency summary: in the event of an accident or when you feel unwell, seek medical advice immediately (show safety label and SDS whenever possible).

3.COMPOSITION / INFORMATION ON INGREDIENTS

Pure☑ Mix☐

Chemical name：difluorochloromethane

Molecular formula：CHCLF2



Molecular mass： 86. 47

Hazard ingredient	Content (%)	CAS №
difluorochloromethane	≥99. 8	75-45-6

4. FIRST AID MEASURES

INHALATION: Immediately remove to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator if available. Get medical attention. Do not give epinephrine (adrenaline).
SKIN: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water for 10-15 minutes. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.
EYES: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.
INGESTION: Ingestion is unlikely

Main symptoms: this product is of low toxicity, but after preparation of tetrafluoroethylene it may produce cracked gas which and the residual liquid components are of high toxicity, it may
cause acute poisoning. Mild cases include cough, chest tightness, dizziness, fatigue, nausea, etc.The heavy man appears chemical pneumonia or interstitial pulmonary edema; In severe cases, alveolar pulmonary edema and myocardial damage may occurred. There are signs of fibrohyperplasia in the later stage.
Animal experiments have shown that difluorochloromethane has anaesthesia and cardiac toxicity.
If skin contact with this liquid product, it may cause frostbite.

ADVICE TO PHYSICIAN: Be sure to let medical staff know about the substance involved and take precautions to protect themselves.To keep patients under observation, appropriate measures should be taken to prevent shock, dyspnea, spasm and other delayed symptoms.Show this SDS to the doctor at the scene.

5. FIRE FIGHTING MEASURES

Fire extinguishing method: this product does not burn.Choose appropriate extinguishing agent according to the cause of fire.
Suitable extinguishing agent: choose suitable extinguishing agent according to the cause of fire.
Inappropriate extinguishing agent: no data available.
Harmful combustion products: no data available.
Special fire extinguishing method: fire fighters should wear gas masks and full-body

fire fighting suits to put out fire in upwind.Move containers as far from the fire as possible into the open. Spray water to keep fire containers cool until the end of the fire.If the container in the fire has discolored or has made a sound from the safety relief device, it must be evacuated immediately.

Special protective equipment for fire fighting personnel: fire fighting personnel shall wear positive pressure air breathing apparatus and full-body fire fighting clothes.

6 ACCIDENTAL RELEASE MEASURES

Protective measures, protective equipment and emergency disposal procedures for operators: the warning area shall be delimited according to the area affected by gas, and irrelevant personnel shall be evacuated to the safe area from crosswind and upwind.It is suggested that emergency workers wear positive pressure self-contained breathing apparatus and general working clothes.Do not touch or cross leakage.Cut off the source of leakage as much as possible.Spray water to inhibit steam or changes the direction of the vapor cloud, preventing water from coming into contact with the leakage. Do not use water to directly impact the leaking substance or source.

Environmental protection measures: cut off the source of leakage as much as possible.Prevent the diffusion of gas through sewers, ventilation systems and closed Spaces.

Methods of receiving and removing the leaking chemicals and the materials used for disposal: the leaking gas is allowed to be discharged into the atmosphere.Keep the leak area ventilated.

Precautions against secondary hazards: no data available.

7. HANDLING AND STORAGE

Operation handling

Precautions for safe handling: closed operation, entirely ventilation.Operators must be specially trained to strictly follow the operation procedures.Keep away from inflammable and combustible materials.Prevent gas leakage into the workplace air. Avoid contact with oxidants.

Handle with care to prevent cylinder and accessories from being damaged.Equipped with leakage emergency treatment equipment.

Storage

Safe storage conditions: store in a cool, ventilated storage room for non-combustible gases.Stay away from fire and heat.Storage temperature should not exceed over 30 ℃.

Storage technical measures: the storage area should be equipped with leakage

emergency treatment equipment.
Forbidden materials: it should be stored separately from inflammable materials and oxidants. Mixed storage should be avoided.
Packing material: usually packed in cylinders

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:
China PC-TWA (mg/m3): 3500;
PC-STEL (mg/m3): 5250*
United States (ACGIH) TLV-TWA: 1000ppm;
Engineering control method: tightly sealed, providing adequate local and overall ventilation.Provide safe shower and eye wash facilities.
Respiratory protection: generally no special protection is required. When the concentration in the air exceeds the limit, wear the corresponding filter gas mask (half mask).Positive pressure self-contained breathing apparatus must be worn during emergency rescue or evacuation.
Hand protection: wear protective gloves for general operation.
Eye protection: no special protection is required.
Skin and body protection: wear general work clothes.
Other protection: avoid high concentration inhalation.Operating in tanks, restricted Spaces or other high-concentration areas requires supervision.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: colorless gas
ODOR: Faint sweetish odor
pH: Not applicable
MELTING POINT(℃): -146
BOILING POINT(℃): -40.8
FLASH POINT: Not applicable
UPPER EXPLOSIVE LIMIT: Not applicable
LOWER EXPLOSIVE LIMIT: Not applicable
Saturated vapor pressure (kPa): 908(20℃)
Relative vapor density (air =1): 3.0
Relative density (water =1): 1.21
Solubility: soluble in water, ether, chloroform, acetone.
N - octanol/water partition coefficient: 1.08

Spontaneous combustion temperature: no data
Decomposition temperature: no data
Ignition temperature (℃): N/A
Combustion heat (kJ/mol): -65.7
Critical temperature (℃): 96
Critical pressure (MPa): 4.91

10. STABILITY AND REACTIVITY

STABILITY: Stable
HAZARDOUS REACTION: no data available.
CONDITIONS THAT SHOULD BE AVOIDED: no data available.
INCOMPATIBILITIES: Strong oxidant, flammable or combustible substance
HAZARDOUS DECOMPOSITION PRODUCTS: hydrogen chloride, hydrogen fluoride

11.TOXICOLOGICAL INFORMATION

Acute toxicity: guinea pigs inhaled 16% of F22 for 55min, show symptoms of muscle twitch and spasm, if stop contact, return to normal; in case of inhalation of 40% for 150min, in addition to the above signs of poisoning, also visible anesthesia phenomenon; In case of inhalation 58% for 8 min. animals die.
LD50: rats inhaled LD50: 1000000mg/m3 for 2 hours
LC50: rats inhalation LC50: 35% for 15min
Subacute and chronic toxicity: rabbits, rats and mice inhaled 0.2% concentration for 6 hours/day for a total of 10 months without toxicity. If concentration is 1.4% concentration, show symptoms of weight loss, serum protein decreased, globulin increased. The alveolar interstitial thickening and pulmonary fluid were found in the lung swelling, pulmonary edema, heart, liver, kidney and nervous system degenerate.
Skin irritation or corrosion: no data available.
Eye irritation or corrosion: no data available.
Respiratory or skin irritation: no data available.
Mutagenesis: microbe mutagenesis: salmonella typhimurium 33%/24hours (continuous). Microsomal mutagenesis: murine typhoid sand. The lowest toxic dose (TCLo) of 33% is 1500 PPM /6h, resulting in muscular skeletal system malformation. Mice 6 ~17ds after pregnancy, inhalation of the lowest toxic dose (TCLo) of 500 PPM /6h, resulting in cardiovascular malformation.

Teratogenicity: the lowest toxic dose (TCLo) of 5 PPM was inhaled in rats 6 ~ 15 days after pregnancy, resulting in abnormal development of eyes and ears. Microbes to mutation: salmonella typhimurium 33%/24H.
Carcinogenicity: IARC review on carcinogenicity: G3, available evidence does not classify human carcinogenicity.
Reproductive toxicity: the lowest toxic concentration (TCL0) inhaled by rats: 50000ppm/ 5h (male 56 days), for prostate and seminal vesicle, Cowper's gland, accessory gland and urethra were affected.
Specific target organ systemic toxicity - single exposure: no data available.
Specific target organ systemic toxicity - repeated exposure: no data available.
Inhalation hazard: no data available.
Toxicokinetics, metabolism and distribution: no data available.

12. ECOLOGICAL INFORMATION

Ecotoxicity: no data available
Persistence and degradability
Biodegradability: no data available;
Non-biodegradability: in air, when the concentration of hydroxyl radical is 5.0×105 /m3, the degradation half-life is 9.4a (theoretical)
Potential bioaccumulation: no data;
Mobility in soil: no data available;
Other harmful effects: ozone depletion potential (ODP) is 0.055, which can damage the ozone layer in the atmosphere.

13. DISPOSAL CONSIDERATIONS

Nature of waste: hazardous waste.
Disposal method: dispose according to national and local laws and regulations.Or contact with manufacturers or manufacturers to determine the disposition methods.
Discard note: return the empty container to the manufacturer

14. TRANSPORT INFORMATION

United Nations dangerous goods code: 1018
United Nations transport name: difluorochloromethane
United Nations classification of hazards: class 2.2 non-flammable non-toxic gases
China dangerous goods No. 22039

Packaging categories: Ⅲ class package.

Packing mark: 

Marine pollutant: No

Notes for transport: the safety helmet on the cylinder must be worn when transporting in cylinders.Cylinders shall be generally placed flat and shall be faced in the same direction, do not cross; The height shall not exceed the protective fence board of the vehicle, and shall be fastened with triangular wooden pad to prevent rolling. Do not mix with inflammable or oxidant, etc. In summer, it should be transported in the morning and evening to prevent sun exposure. In railway transport It is forbidden to slide.

15. Regulations information

Safety Production law of the People's Republic of China (adopted at the 28th meeting of the ninth NPC standing committee on June 29, 2002);
Occupational disease prevention and control law of the People's Republic of China (adopted at the 24th session of the 11th NPC standing committee on December 31, 2011);
Environmental protection law of the People's Republic of China (adopted at the 11th session of the seventh NPC standing committee on December 26, 1989);
The regulations on the safety management of hazardous chemicals (no. 591 of the state council, which came into force on December 1, 2011) stipulates relevant provisions on the safety management of the production, storage, use, operation and transportation of hazardous chemicals.
The disposal of abandoned hazardous chemicals shall be carried out in accordance with the relevant laws and administrative regulations on environmental protection and the relevant provisions of the state;
Regulations on the safe use of chemicals in the workplace (no. 423 [1996] issued by the ministry of labor);
Regulations on labor protection in workplaces where toxic substances are used (no. 352 of the state council);
Dangerous goods name table (GB12268-2012);
List of the first batch of hazardous chemicals under key supervision (safety supervision general manager [2011] no. 95);
Notice on issuance of the first batch of notice on the safety measures and emergency disposal principles of hazardous chemicals under key supervision
Occupational exposure limits for hazardous factors in the workplace - part 1: chemical

hazardous factors (GBZ2.1-2007);
Contents and project sequence of chemical safety technical specification (GB/ t16483-2008);
Regulations on preparation of chemical safety labels (GB 15258-2009)
Guidelines for compilation of chemical safety technical specifications (GB/T 17519-2013);
Specification for classification and labelling of chemicals (GB 30,000-2013);
Catalogue of hazardous chemicals (2015 edition) published by the state administration of safety;Implementation guidelines for the catalogue of hazardous chemicals (2015 edition) (trial);Hazardous chemicals classification information table.

16. Other informations

The information contained in this SDS is compiled according to our knowledge and used only for health, safety and environmental purposes.Please do not use this information as any form of warranty.Please provide necessary training to the personnel who may use, dispose and need to operate the product safely.

References: safety technology of hazardous chemicals and dangerous goods (2nd edition), Zhang haifeng, chemical industry press, June 2007.