

1,1,1,2-tetrafluoroethane (R134a)

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: 1, 1, 1,2-tetrafluoroethane

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

MSDS code: SDS/FH 10-2021

Originally constructed: June, 2010

Revised date: Jan 1st, 2021

Main application : as refrigerant used in refrigerator, freezer and car air's

conditioning system, also can be used as aerosol spray agent for medicine and cosmetics.

Restricted application: No information

2. HAZARD PROFILE

GHS risk category:

Physical hazard	Health hazard	Environment hazard
Pressurized gas: classified as liquefied gas	unclassified	unclassified

Label elements and warning instructions:

Hazard Pictogram:



Signal word: Warning

Hazard statement: It contains pressurized gas, which may explode when heated.

[PRECAUTION MEASURES]

- Closed operation, pay attention to ventilation.
- Prevent leakage of steam into the workplace air.
- High thermal decomposition, releasing toxic fluoride and chloride gas.
- When the pressure inside the heat vessel increases, there is danger of explosion.
- Asphyxiation, emergency personnel wear positive pressure self-contained breathing apparatus

[EMERGENCY RESPONSE]

- Skin contact: in case of frostbite: rewarm the affected area by soaking it in warm water maintained at 38 ~ 42°C.
- Eye contact: lift eyelid immediately, rinse thoroughly with plenty of flowing water or normal saline for 10-15 minutes.If you feel unwell, seek medical advice.
- Inhalation: quickly remove from site to fresh air.Keep respiratory tract open.If breathing becomes difficult, administer oxygen.Cardiopulmonary resuscitation (CPR) should be performed immediately when breathing and heartbeat stop. Go

to a doctor.

- This product does not burn, according to the cause of fire choose appropriate fire extinguishing agent.

[STORAGE]

- Store in a cool, well-ventilated place.
- Protect from sun, keep away from fire and heat source.
- It should be stored separately with inflammable substances and oxidants. Mixed storage should be avoided.

[DISPOSAL AND TREATMENT]

- Dispose according to national and local regulations, or contact the manufacturer for disposal.

Main symptoms: if in high concentration, the oxygen in the air can be lower, which cause partial pressure of oxygen asphyxiation. if skin and eyes contact liquid product, it can cause damage such as frostbite. HF and fluorocarbon oxides (such as the highly toxic carbonyl fluoride) are formed by decomposition at high temperatures.

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

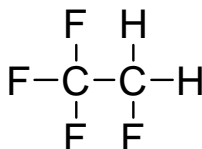
3. COMPOSITION / INFORMATION ON INGREDIENTS

pure ☒

mixed ☐

Chemical name: 1,1,1,2--tetrafluoroethane

formula: C₂H₂F₄



Molecular mass: 102.03

Hazard ingredient	Content (%)	CAS No
1,1,1,2--tetrafluoroethane	≥99.8	811-97-2

4. FIRST AID MEASURES

Inhalation: quickly remove from site to fresh air.Keep respiratory tract open.If breathing becomes difficult, administer oxygen. Cardiopulmonary resuscitation (CPR) should be performed immediately when breathing and heartbeat stop.Go to a doctor.

Skin contact: in case of frostbite: rewarm the affected area by soaking it in warm water maintained at 38 ~ 42℃. Don't rub. Do not use hot water or radiant heat.Use a clean, dry dressing and seek medical attention.

Eye contact: lift eyelid and rinse with flowing water or normal saline.If you feel unwell, seek medical advice.

Ingestion: no contact through this route.

Main symptoms: if in high concentration, the oxygen in the air can be lower, which cause partial pressure of oxygen asphyxiation.if skin and eyes contact liquid product, it can cause damage such as frostbite. HF and fluorocarbon oxides (such as the highly toxic carbonyl fluoride) are formed by decomposition at high temperatures

Medical precautions: be sure to let medical personnel know about the substance involved and take protective measures 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: When decomposed at high temperatures, toxic HF and fluorocarbons are released

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 change 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 °C.

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: no data

United States: no data

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 transparency liquid

ODOR: slight aetheral odor.

pH: Not applicable

MELTING POINT(°C): -101

BOILING POINT(°C): -26.1

FLASH POINT: Not applicable

UPPER EXPLOSIVE LIMIT: Not applicable

LOWER EXPLOSIVE LIMIT: Not applicable

Saturated vapor pressure (kPa): 6630mmHg at (25°C)

Saturation vapor density: 5.25 kg/m³

Liquid density : 1206 kg/m³ (25°C)

Solubility: slight solubilize in water, solubilize in ethanol, ether.

N - octanol/water partition coefficient: no data

Spontaneous combustion temperature: no data

Decomposition temperature: no data

Ignition temperature (°C): meaningless

Combustion heat (kJ/mol): no data

Critical temperature (°C): 101.25

Critical pressure (MPa): 4.06

10. STABILITY AND REACTIVITY

STABILITY: Stable

HAZARDOUS REACTION: no data available.

CONDITIONS THAT SHOULD BE AVOIDED: open fire, high temperature

INCOMPATIBILITIES: Strong oxidant, flammable or combustible substance

HAZARDOUS DECOMPOSITION PRODUCTS: hydrogen chloride, fluorocarbon

11. TOXICOLOGICAL INFORMATION

Acute toxicity: no data available.

Subacute and chronic toxicity: no data available.

Skin irritation or corrosion: no data available.

Eye irritation or corrosion: no data available.

Respiratory or skin irritation: no data available.

Mutagenesis: no data available.

Teratogenicity: no data available.

Carcinogenicity: The product does not include any of the compounds listed as carcinogens by NTP or IARC or OSHA.

Reproductive toxicity: no data available.

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: no data available;

Potential bioaccumulation: no data available;

Mobility in soil: no data available;

Other harmful effects: ozone depletion potential (ODP) is 0

13. DISPOSAL CONSIDERATIONS

Nature of waste: no data available;

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: 3159

United Nations transport name: 1,1,1,2--tetrafluoroethane

United Nations classification of hazards: class 2.2 non-flammable non-toxic gases

China dangerous goods No.: no data available

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. Road transport should follow the prescribed route, not stay in residential and densely populated areas. 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.
