SAFETY DATA SHEET

1,1,1,2-Tetrafluoroethane R134a

Henan Fengzhimao Environmental Refrigeration Technology Co., Ltd

SDS

- **According to GHS (Eighth Revised Edition)**

Section 1 Product and Company Identification

> Product Identifier

Product Name	1,1,1,2-Tetrafluoroethane R134a
Synonyms	-
CAS No.	811-97-2
EC No.	212-377-0
Molecular Formula	$C_2H_2F_4$

> Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Relevant Identified Uses	Please consult manufacturer.
Uses Advised Against	Please consult manufacturer.

> Details of the Supplier of the Safety Data Sheet

Applicant Name	Henan Fengzhimao Environmental Refrigeration Technology Co., Ltd
Application Address	The west side of connection line of express way and the north side of wangye road, the high and new industrial cluster of Minquan County, Shangqiu, CHINA
Applicant Post Code	45000
Applicant Telephone	+86-370-8839999
Applicant Fax	——
Applicant E-mail	1647527617@qq.com
Supplier Name	Henan Fengzhimao Environmental Refrigeration Technology Co., Ltd
Supplier Address	The west side of connection line of express way and the north side of wangye road, the high and new industrial cluster of Minquan County, Shangqiu, CHINA
Supplier Post Code	45000
Supplier Telephone	+86-370-8839999
Supplier Fax	——
Supplier E-mail	1647527617@qq.com

> Emergency Phone Number

Emergency Phone Number	+86-370-8839999

Section 2 Hazards Identification

Hazard class and label elements of the product according to GHS (the eighth revised edition):

> GHS Hazard Class

Gases Under Pressure Liquefied gas

> GHS Label Elements

Pictogram

Signal Word **Warning**

> Hazard Statements

H280 Contains gas under pressure; may explode if heated

> Precautionary Statements

Prevention

Not applicable

Response

Not applicable

Storage

P410+P403 Protect from sunlight. Store in a well-ventilated place.

Disposal

Not applicable

Section 3 Composition/Information on Ingredients

Component	Concentration (weight percent, %)	CAS No.	EC No.
1,1,1,2-Tetrafluoroethane	≥ 99.9	811-97-2	212-377-0

Section 4 First Aid Measures

> Description of First Aid Measures

General Advice Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.

Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.

Skin Contact Take off contaminated clothing and shoes immediately. Wash off with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.

Inhalation Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately.

Protecting of First-aiders Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

> Most Important Symptoms and Effects, both Acute and Delayed

1 Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

> Indication of Any Immediate Medical Attention and Special Treatment Needed

1 Treat symptomatically.

2 Symptoms may be delayed.

Section 5 Fire Fighting Measures

> Extinguishing Media

Suitable Extinguishing Media	Dry chemical or carbon dioxide.
Unsuitable Extinguishing Media	Do not use a solid water stream as it may scatter or spread fire.

> Specific Hazards Arising from the Substance or Mixture

1. High concentrations of gas may cause asphyxiation without warning.
2. Contact with gas may cause burns, severe injury and/ or frostbite.
3. Containers may explode when heated.
4. Fire exposed containers may vent contents through pressure relief valves.
5. May expansion or decompose explosively when heated or involved in fire.

> Advice for Firefighters

1. As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent)and full protective gear.
2. Fight fire from a safe distance, with adequate cover.
3. Prevent fire extinguishing water from contaminating surface water or the ground water system.

Section 6 Accidental Release Measure

> Personal Precautions, Protective Equipment and Emergency Procedures

1. Ensure adequate ventilation. Remove all sources of ignition.
2. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
3. Use personal protective equipment. Avoid breathing vapours, mist, gas or dust.

> Environmental Precautions

1. Prevent further leakage or spillage if safe to do so.
2. Discharge into the environment must be avoided.

> Methods and Materials for Containment and Cleaning Up

1. Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
2. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.
3. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Section 7 Handling and Storage

> Precautions for Handling

1. Handling is performed in a well ventilated place.
2. Wear suitable protective equipment.
3. Avoid contact with skin and eyes.
4. Keep away from heat/sparks/open flames/ hot surfaces.

5 Take precautionary measures against static discharges.

> Precautions for Storage

1 Keep containers tightly closed.
2 Keep containers in a dry, cool and well-ventilated place.
3 Keep away from heat/sparks/open flames/ hot surfaces.
4 Store away from incompatible materials and foodstuff containers.

Section 8 Exposure Controls/Personal Protection

> Control Parameters

Occupational Exposure Limit Values

Component	Country/Region	Limit Value - Eight Hours		Limit Value - Short Term	
		ppm	mg/m³	ppm	mg/m³
1,1,1,2-Tetrafluoroethane 811-97-2	Switzerland	1000	4200	-	-
	Sweden	500	2000	750	3000
	New Zealand	1000	-	-	-
	Germany (AGS)	1000	4200	8000	33600
	Austria	1000	4200	4000	16800
	Australia	1000	4240	-	-

Biological Limit Values

No information available

Monitoring Methods

1 EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
2 GBZ/T 160 Determination of toxic substances in workplace air(Series effective standard)and GBZ/T 300 Determination of toxic substances in workplace air(Series standard).

> Engineering Controls

1 Ensure adequate ventilation, especially in confined areas.
2 Ensure that eyewash stations and safety showers are close to the workstation location.
3 Use explosion-proof electrical/ventilating/lighting/equipment.
4 Set up emergency exit and necessary risk-elimination area.

> Personal Protection Equipment

Eye Protection	Tightly fitting safety goggles (approved by EN 166(EU) or NIOSH (US).
Hand Protection	Wear protective gloves （such as butyl rubber）, passing the tests according to EN 374(EU),US F739 or AS/NZS 2161.1 standard.
Respiratory protection	If exposure limits are exceeded or if irritation or other symptoms are experienced, use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges.
Skin and Body Protection	Wear fire/flame resistant/retardant clothing and antistatic boots.

Section 9 Physical and Chemical Properties

Appearance: Colorless liquefied gas
Odor: No information available
Odor Threshold: No information available
pH: Not applicable

Melting Point/Freezing Point (℃): -101
Initial Boiling Point and Boiling Range (℃): -26
Flash Point (℃)(Closed Cup): Not applicable
Evaporation Rate: Not applicable
Flammability: No information available
Upper/lower explosive limits[%(v/v)]: Upper limit: No information available; Lower limit: No information available
Vapor Pressure (KPa): Not applicable
Relative Vapour Density(Air = 1): Not applicable
Relative Density(Water=1): Not applicable
Solubility: Insoluble in water
n-Octanol/Water Partition Coefficient: Not applicable
Auto-Ignition Temperature(℃): > 743
Decomposition Temperature (℃): No information available
Kinematic Viscosity (mm^2/s): Not applicable
Particle characteristics: Not applicable

Section 10 Stability and Reactivity

Reactivity	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical Stability	Stable under proper operation and storage conditions.
Possibility of Hazardous Reactions	No information available
Conditions to Avoid	Incompatible materials, heat, flame and spark.
Incompatible Materials	No information available
Hazardous Decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11 Toxicological Information

> Acute Toxicity

Component	CAS No.	LD_{50}(Oral)	LD_{50}(Dermal)	LC_{50}(Inhalation, 4h)
1,1,1,2-Tetrafluoroethane	811-97-2	No information available	No information available	1500mg/L(Rat)

> Skin Corrosion/Irritation

No information available

> Serious Eye Damage/Irritation

No information available

> Skin Sensitization

No information available

> Respiratory Sensitization

No information available

> Germ Cell Mutagenicity

No information available

> Carcinogenicity

ID	CAS No.	Component	IARC	NTP
1	811-97-2	1,1,1,2-Tetrafluoroethane	Not Listed	Not Listed

> Reproductive Toxicity

No information available

> Reproductive Toxicity (Additional)

No information available

> STOT-Single Exposure

No information available

> STOT-Repeated Exposure

No information available

> Aspiration Hazard

No information available

Section 12 Ecological Information

> Acute Aquatic Toxicity

No information available

> Chronic Aquatic Toxicity

No information available

> Others

Persistence and Degradability	No information available
Bioaccumulative Potential	No information available
Mobility in Soil	No information available
Results of PBT and vPvB Assessment	1,1,1,2-Tetrafluoroethane does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Section 13 Disposal Considerations

Waste Chemicals	Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.
Contaminated Packaging	Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.
Disposal Recommendations	Refer to section 13.1and 13.2.

Section 14 Transport Information

Transporting Label

Marine pollutant None

UN Number 3159

UN Proper Shipping Name 1,1,1,2-TETRAFLUOROETHANE

Transport Hazard Class 2.2

Transport Subsidiary Hazard Class NONE

Packing Group The packagings must conform to package instructions of UN number

Section 15 Regulatory Information

> International Chemical Inventory

Component	EINECS	TSCA	DSL	IECSC	NZIoC	PICCS	KECI	AICS	ENCS
1,1,1,2-Tetrafluoroethane	√	√	√	√	√	√	√	√	×

【EINECS】 European Inventory of Existing Commercial Chemical Substances.
【TSCA】 United States Toxic Substances Control Act Inventory.
【DSL】 Canadian Domestic Substances List.
【IECSC】 China Inventory of Existing Chemical Substances.
【NZIoC】 New Zealand Inventory of Chemicals.
【PICCS】 Philippines Inventory of Chemicals and Chemical Substances.
【KECI】 Existing and Evaluated Chemical Substances.
【AICS】 Australia Inventory of Chemical Substances.
【ENCS】 Existing And New Chemical Substances.

Note
"√" Indicates that the substance included in the regulations
"×" That no data or included in the regulations

Section 16 Additional Information

Creation Date 2020/11/27
Revision Date 2020/11/27
Reason for Revision -

> Disclaimer

This Safety Data Sheet (SDS) was prepared according to UN GHS (the 8th revised edition). The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user' s reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.