

SAFETY DATA SHEET

R134a

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name	R134a
Synonyms	HFC 134a; 1,1,1,2-tetrafluoroethane
Chemical Formula	$\text{CH}_2\text{-F-CH}_3$
CAS No	811-97-2
Use of Substance	Industrial uses as refrigerant, blowing agent, propellant and solvent.
Manufacturer	Juhua Group Corporation No. 849 Jiangcheng Rd, Hangzhou, Zhejiang Province, 310009
Contact Number	+86-570-3098687
Emergency Phone Number (24 hr)	+86-570-3097819
SDS Reference Number	CSDS/FH 14-2015

52 °C (125°F).

CGA-PG05 : Use a back flow preventive device in the piping.

CGA-PG06 : Close valve after each use and when empty.

CGA-PG27 : Read and follow the Safety Data Sheet (SDS) before use.

OSHA-PG01 : DO NOT REMOVE THIS PRODUCT LABEL (or equivalent wording).

Other Hazards

Contact with liquid or cold vapor can cause frostbite.
Low acute toxicity.
High exposures may cause an abnormal heart rhythm and prove suddenly fatal.
Very high concentrations may cause anesthetic affects and asphyxiation.
Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name	Ingredient	CAS Number	Specification	OSHA-PEL
R134a	1,1,1,2-tetrafluoroethane	811-97-2	100% (w/w)	None established.

*Contains no other components or impurities which influence the classification of the product.

4. FIRST AID MEASURES

Eye Contact

Contact with liquid or cold vapor can cause frostbite.
Immediately flush with water for at least 15 minutes, opening eyelids to ensure flushing.
Get medical attention if symptoms occur.

Inhalation

Victims should be assisted to an uncontaminated area is most important.
Move exposed person to fresh air.
If not breathing, provide artificial respiration or oxygen by trained personnel.
In the event of cardiac arrest apply external cardiac massage.
Further treatment should be symptomatic and supportive.
Keep victim warm and quiet.
PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE.
RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Skin Contact

Take off the contaminated clothing / shoes immediately.
Flush the affected area with lukewarm water not exceeds 105°F (40°C) immediately.
Get medical attention if symptoms occur.

Ingestion

Unlikely route of exposure.
Do not induce vomiting.
Provided the patient is conscious, wash out mouth with water and give 200-300ml of water to drink.
Get medical attention if symptoms occur.

Most important symptoms and effects, both acute and delayed

High concentrations may cause asphyxiation. Symptoms may include loss of mobility/ consciousness. Victim may not be aware of asphyxiation. As asphyxiation progresses, nausea, vomiting, prostration, and loss of consciousness may result, eventually leading to convulsions, coma, and death.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media

None known

Special hazards arising from the chemical

Exposure to fire may cause containers to rupture/explode. R134a does not support life. It act as a simple asphyxiant.

Special protective equipment and precautions for fire fighters

In case of fire: Stop leak if safe to do so. Continue water spray from protected position until container stays cool. In confined space use self-contained breathing apparatus (open-circuit positive pressure compressed air type) in combination with fire kit. Thermal decomposition will evolve very toxic and corrosive vapors (hydrogen fluoride). HFC 134a is not flammable in air under ambient condition of temperature and pressure. Certain mixtures of HFC 134a and air when under pressure maybe flammable. Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions. Safety gloves and shoes, or boots, should be worn when handling cylinders.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Ensure suitable personal protection (including respiratory protection) during removal of spillages.
Evacuate surrounding areas.
Keep unnecessary and unprotected personnel from entering.

Environmental precautions

If safe to do so: isolate the source of the leak.
Large spillages: Ventilate area.
Contain spillages with sand, earth or any suitable adsorbant material.
Try to stop release.
Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous.

7. HANDLING AND STORAGE

Precaution for safe handling

Avoid inhalation of high concentrations of vapors. Atmospheric level should be controlled in compliance with the occupational exposure limit. Atmospheric concentrations well below the occupational exposure limit can be achieved by good occupational hygiene practice.

The vapor is heavier than air, high concentrations may be produced at low levels where general ventilation is poor.

In such cases, provide adequate ventilation or wear suitable respiratory protective equipment with positive air supply.

Avoid contact with naked flames and hot surfaces as corrosive and very toxic decomposition products can be formed. Avoid contact between the liquid and skin and eyes.

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.

Suck back of water into the container must be prevented.

Do not allow back feed into the container.

Contact your gas supplier if in doubt.

Never use direct flame or electrical heating devices to raise the pressure of cylinder.

Valve protection caps must remain in place unless container is secured with valve outlet piped to use point.

Do not drag, slide or roll cylinders.

Use a suitable hand truck for cylinder movement.

Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

Use a pressure regulator when connecting cylinder to lower pressure piping or systems.

Avoid venting to atmosphere.

Condition for safe storage

Keep away from ignition sources (including static discharges).

Do not allow the temperature where cylinders are stored to exceed 125°F (52°C).

Use a "first-in-first out" inventory system to prevent full cylinders from being stored for excessive period of time.

Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits

Full and empty cylinders should be segregated.

Containers should not be stored in conditions likely to encourage corrosion.

Container should be stored in the vertical position and properly secured to prevent falling over.

Outside or detached storage is preferred.

Post "No Smoking" signs in use or storage areas.

There should be no accidental ignition in areas where this product is being used or stored.

Avoid storing near to the intake of air conditioning units, boiler units, and open drains.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limit: OSHA-PEL

Chemical Name	Eight-hour time-weighted average airborne concentration	
	ppm	mg/m ³
R134a (1,1,1,2-Tetrafluoroethane)	-	-

Appropriate controls

engineering

Use local exhaust and general ventilation systems.
 Engineering control measures are preferred to reduce oxygen depleted atmospheres.
 General methods include force-draught ventilation, separate from other exhaust ventilation systems.
 Ensure that sufficient fresh air enters at, or near, floor level.

Personal protection equipment

Wear goggles for eye protection.
 Protective gloves made of any suitable material.
 Contact lens should not be worn when working.
 Wear suitable hand, body and head protection.
 Do not eat, drink or smoke when using the product.
 For emergency release use a positive pressure NIOSH approved air supplying respirator systems (SCBA or airline/escape bottle)

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Colorless, Liquefied gas
Odour	:	Slightly ethereal.
Odour threshold	:	Odour threshold is subjective and inadequate to warn for over exposure.
pH	:	Not applicable
Melting point / Freezing point	:	-101 °C
Boiling point	:	-26.5 °C
Flash point	:	Not applicable
Evaporation rate	:	Not available
Flammability	:	Not available
Upper/lower explosive limit	:	Not available
Vapour pressure	:	4270 mmHg at 20°C
Vapour density (Air =1)	:	3.66 at normal boiling point
Relative density	:	1.208 Water : 25°C, 1atm
Solubility (H₂O)	:	Slightly soluble
Partition coefficient	:	1.06 logPow The product is more soluble in octanol.
Auto ignition temperature	:	Not applicable
Decomposition temperature	:	Not available
Viscosity	:	Not applicable

10. STABILITY AND REACTIVITY

Reactivity	No reactivity hazard other than the effects described in sub-sections below.
Chemical Stability	Stable.
Possibility of hazardous reactions	Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions. Can react violently if in contact with alkali metals and alkaline earth metals - sodium, potassium, barium.
Condition to avoid	Keep away from heat/sparks/open flames/hot surfaces – No smoking.
Incompatible materials	Incompatible materials: finely divided metals, magnesium and alloys containing more than 2% magnesium.
Hazardous decomposition products	Hydrogen fluoride by thermal decomposition and hydrolysis.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity	Oral: LD ₅₀ > No information available. Dermal: LD ₅₀ > No information available. Inhalation: LC ₅₀ > Rat, 2,080,000 mg/m ³ 4hrs
Skin corrosion / irritation	Not classified
Serious eye damage/ irritation	Not classified
Respiratory or skin sensitization	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity product	Not classified
Reproductive toxicity product	Not classified
Specific target organ toxicity – single exposure product.	Not classified
Specific target organ toxicity – repeated exposure product	Not classified
Aspiration hazard product	Not applicable to gases and gas mixtures.

12. ECOLOGICAL INFORMATION

Ecotoxicity effect

Acute toxicity product No ecological damage caused by this product

Additional ecological information No ecological damage caused by this product.

Persistence and degradability Not readily biodegradable.

Bioaccumulative potential Not expected to bioaccumulate due to the low log Kow (log Kow < 4).

Mobility in soil No data available.

Other adverse effects Effect on ozone layer : None
Global Warning Potential [CO₂=1] : 1300.

13. DISPOSAL CONSIDERATIONS

Waste from residue / unused product Do not attempt to dispose of residual waste or unused quantities.
Contact supplier if guidance is required.

Contaminated packaging Do not reuse empty containers.
Empty remaining contents.
Dispose of container and unused contents in accordance with local and national regulation.
Return cylinder to supplier

14. TRANSPORT INFORMATION

UN Number	UN 3159
UN proper shipping name	1,1,1,2-Tetrafluoroethane
Transport hazard class(es)	2.2
Packing group	-
Environmental hazards	Not applicable
Special precautions for user	None
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not available

Others Information

Ensure the driver is understand well on the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Secured the product containers before transporting it.
Ensure that the cylinder valve is closed and not leaking.
Container valve guards or caps should be in place.
Ensure adequate air ventilation.

15. REGULATORY INFORMATION

Contact local government authority.

16. OTHER INFORMATION

16. OTHER INFORMATION

Legend to the abbreviations and acronyms used

Classification of the substance	Press. Gas	:	Gases under pressure (Liquefied gas)
	LC ₅₀	:	Lethal Concentration
	LD ₅₀	:	Median Lethal Dose
	EC ₅₀	:	Half Maximal Effective Concentration

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