

1. Identification

Product name R-134a
Synonyms -
CAS # See section 3
Product code -
Product use Used as refrigerants.
Manufacturer/Supplier
Supplier (Manufacturer): iGas USA, Inc.
Address: 8105 Anderson Road, Tampa, FL 33634
Contact person (E-mail): projects@igasusa.com
Telephone: (813)443-0757
Fax: (813)886-7900
Emergency telephone Number: Chemtrec: 1-800-424-9300

2. Hazard(s) identification

GHS classification

Physical hazards	Gases under pressure	Liquefied gas
Health hazards	Not classified	
Environmental hazards	Not classified	

GHS label elements

Hazard Pictograms



Signal word Warning
Hazard statement Contains gas under pressure; may explode if heated.
Precautionary statement
Prevention Not applicable.
Response Not applicable.
Storage Protect from sunlight. Store in a well-ventilated place.
Disposal Not applicable.

3. Composition / information on ingredients

Components	CAS#	Percent
Norflurane	811-97-2	≥99.9%

4. First-aid Measures

First aid procedures

Eye contact Immediately flush with plenty of water. After initial flushing, remove any contact lenses

and continue flushing for at least 15 minutes. Have eyes examined and treated by medical personnel.

Skin contact

Thaw affected area with water. Remove contaminated clothing. Caution: clothing may adhere to the skin in case of freeze burns. After contact with skin, wash immediately with plenty of warm water. If symptoms (irritation or blistering) develop, get medical attention.

Inhalation

Remove victim to fresh air. Keep warm and at rest. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is labored, give oxygen. In the event of a cardiac arrest, apply external cardiac massage.

Ingestion

Ingestion is unlikely because of the physical properties and is not expected to be hazardous. Do not induce vomiting unless instructed to do so by a physician.

Notes to physician

Treat symptoms.

5. Fire-fighting measures

Flammable properties

Not available.

Extinguishing media

Suitable extinguishing media

Use appropriate extinguishing media.

Unsuitable extinguishing media

Not available.

Firefighting equipment/instructions

Shut off gas supply if this can be done safely. If possible, take container out of dangerous zone. Cool cylinders with water spray. Self-contained breathing apparatus (SCBA) may be required if cylinders rupture or release under fire conditions.

Hazardous combustion products

Carbon oxides, Hydrogen fluoride.

6. Accidental release measures

Personal precautions

Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods for cleaning up

For large releases: Use recommended personal protection and evacuate unprotected personnel. Shut off the leak if without risk. Ventilate the spill area. If possible, dike and contain spillage. Prevent liquid from entering sewers, sumps or pit areas since vapor can create a suffocating atmosphere. Capture material for recycle or destruction if suitable equipment is available.

7. Handling and storage

Handling

Avoid causing and inhaling high concentrations of vapor. Atmospheric levels should be controlled to below the occupational exposure limit and kept as low as practicable. Do not put mixture of HFC134a with air or oxygen under pressure. Do not use such mixtures for leak or pressure testing. Avoid HFC134a contact with flame or very hot surfaces.

Storage

Keep at temperature not exceeding 120 °F (49 °C). Keep in a cool, well ventilated place. Keep containers dry. Keep away from direct sunlight, heat and sources of ignition.

8. Exposure controls / personal protection

Control parameters:

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA:

Not Available

EMERGENCY LIMITS:

Ingredient	Original IDLH	Revised IDLH
Norflurane	Not Available	Not Available

Exposure controls:

Appropriate engineering controls: Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Individual protection measures, such as personal protective equipment:

Eye / face protection	Chemical tight goggles; full face shield in addition if splashing is possible.
Skin protection	Body protection: Impervious gloves if any possibility of skin contact with liquid. Additional protection may be required such as apron, arm covers, or full body suit, depending upon conditions. Hand protection: Wear leather gloves to prevent frostbite injuries from rapidly expanding gas when handling pressurized gas bottles.
Respiratory protection	Not normally needed if controls are adequate. If needed, use MSHA-NIOSH approved respirator for organic vapors. For high concentrations and oxygen-deficient atmospheres, use positive pressure air-supplied respirator.
General hygiene considerations	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing.

9. Physical and chemical properties

Appearance

Physical state	Gas
Form	Compressed liquefied gas
Color	Clear, colorless
Odor	Faint ethereal odor
Odor threshold	Not available
pH	Not available
Vapor pressure	5.74 Bar (20 °C)
Melting point/Freezing point	-101°C
initial boiling point and boiling range	-26.2°C
Flash point	Not available
Evaporation rate	Not available
Flammability (solid, gas)	Non-flammable

Material name: R-134a

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Explosion limits	Not available
Vapor density	Not available
Relative density	Not available
Solubility (water)	Slightly in water.
Partition coefficient	1.06 (25 °C)
Auto-ignition temperature	> 743 °C
Decomposition temperature	Not available
Specific gravity	1.23 at 20°C (70°F)
Density	Not available
Flammability limits in air, upper, %by volume	Not available
Flammability limits in air, lower, % by volume	Not available
VOC	Not available
Percent volatile	Not available
Other data	
Viscosity	Not available

10. Stability and reactivity

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Incompatible materials.
Incompatible materials	Finely divided metals, magnesium and alloys containing more than 2% magnesium. Can react violently if in contact with alkali metals and alkaline earth metals - sodium potassium and barium.
Hazardous decomposition products	Carbon oxides, Hydrogen fluoride.
Possibility of hazardous reactions	Can react violently if in contact with alkali or alkali earth metals such as sodium, potassium or barium. Dangerous on contact with acid or acid fumes, they emit highly toxic fumes.

11. Toxicological information

Toxicokinetics, metabolism and distribution:

Non-human toxicological data: Not available

Information on toxicological effects:

Acute toxicity:

LD50(Oral, Rat):	Not available
LD50(Dermal, Rabbit):	Not available
LC50(Inhalation, Rat):	1500 mg/m ³ /4h
Skin corrosion/Irritation:	Not classified.
Serious eye damage/irritation:	Not classified
Respiratory or skin sensitization:	Not classified
Germ cell mutagenicity:	Not classified
Carcinogenicity:	Not classified
Reproductive toxicity:	Not classified
STOT- single exposure:	Not classified
STOT-repeated exposure:	Not classified
Aspiration hazard:	Not classified

12. Ecological information

Toxicity:

Acute toxicity		Time	Species	Method	Evaluation	Remarks
LC50	450 mg/L	96h	Fish	OECD 203	N/A	N/A
EC50	980 mg/L	48h	Daphnia	OECD 202	N/A	N/A
EC50	N/A	72h	Algae	OECD 201	N/A	N/A

Persistence and degradability:	Negligible biodegradation after 28 days.
Bio-accumulative potential:	R-134a will not bioconcentrate in fish and aquatic organisms.
Mobility in soil:	R-134a will display moderate to high mobility in soil.
Results of PBT & vPvB assessment:	The substance is not PBT / vPvB.
Other adverse effects:	No known significant effects or critical hazards.

13. Disposal considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Basic shipping requirements:

UN number	UN3159
Proper shipping name	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)
Hazard class Packing group Environmental hazards	2.2 - No

IATA

UN number	UN3159
UN proper shipping name	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)
Transport hazard class(es) Packing group Environmental hazards	2.2 - No

IMDG

UN number	UN3159
UN proper shipping name	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)
Transport hazard class(es) Packing group Environmental hazards	2.2 - No

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture:

Norflurane (811-97-2) is found on the following regulatory lists	"US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values" List. "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" List.
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16. Other information, including date of preparation or last revision

HMIS@ratings

Health: 1

Flammability: 1

Physical hazard: 3

NFPA ratings

Health:1

Flammability: 1

Instability: 3

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available.

Issue date

04-29-2015