Advanced Specialty Gases
An Iwatani Company

Safety Data Sheet
TETRAFLUOROETHANE (R-134a)

www.advancedspecialtygases.com

Section 1: Product and Company Identification

Advanced Specialty Gases
135 Catron Dr. Reno, NV 89512
775-356-5500

IN CASE OF EMERGENCY CALL CHEMTREC: 1-800-424-9300

Product Code: TETRAFLUOROETHANE (R-134a)

Section 2: Hazards Identification

Warning

Hazard Classification:
Gases Under Pressure

Hazard Statements:
Contains gas under pressure; may explode if heated

Precautionary Statements

Storage:
Protect from sunlight.
Store in well-ventilated place.

Section 3: Composition/Information on Ingredients

CAS #
811-97-2

Chemical Substance	Chemical Family	Trade Names

Chemical Substance	Chemical Family	Trade Names
1,1,1,2-Tetrafluoroethane	Halogenated, Aliphatic	Dymel, 134a, refrigerant gas R134a : Ethane,1,1,1,2-Tetrafluoro-; 1,2,2,2-Tetrafluoroethane

Section 4: First Aid Measures

Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
If it is safe to do so, remove victim to an uncontaminated area, and place them in a comfortable position to wait for medical attention. Immediately remove contaminated clothes and shoes. Cleanse the affected skin areas thoroughly with soap under running water for 15 minutes. Seek medical treatment. For exposure to liquid, immediately warm frostbite area with warm water less than 105F (41C).	Rinse the affected eye thoroughly for 10 minutes under running water. Seek immediate medical treatment.	Swallowing is not a likely route of exposure.	If it is safe to do so, remove victim to fresh air, and place them in a comfortable position to wait for medical attention. Administer oxygen or artificial respiration if breathing is difficult. Seek immediate medical treatment.	Do not administer adrenaline due to the sensitizing effect of fluorocarbons on the myocardium. Treatment of overexposure should be directed at the control of symptoms and the clinical condition. Exposure to fluorocarbon pyrolysis products should be considered in the diagnostic evaluation of occupationally related fever of short duration and unknown origin. Signs of exposure include tachycardia, hyperpnoea, and pharyngeal congestion; investigation may reveal pulmonary edema and leukocytosis.

Section 5: Fire Fighting Measures

Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Non-flammable. Use extinguishing media suitable for surrounding fire.	Non-flammable	▪ Self-contained breathing apparatus and protective clothing may be required by rescue workers. Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear. ▪ Non-flammable

Section 6: Accidental Release Measures

Personal Precautions	Environmental Precautions	Methods for Containment
Asphyxiant. Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus and protective clothing where needed. Shut off leak if without risk. Ventilate area of leak or move cylinder to a well-ventilated area. Before reentering area, especially confined spaces, check for sufficient oxygen with an appropriate device. Remove all sources of ignition. Soak up small spills with absorbent material. Contain large spills with a dike; pump product into recovery drums	Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.	None available

Methods for Cleanup	Other Information
None available	None

Section 7: Handling and Storage

Handling	Storage
Keep container tightly closed in a locked area. Protect from sunlight. Protect from ignition sources. Secure cylinders upright to keep them from falling or being knocked over. Store only where temperature will not exceed 125F (52C).	Always handle in a well ventilated area. Use only in closed systems. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. Avoid contact with skin and eyes. Keep away from heat and ignition sources. Do not get liquid in eyes, on skin, or clothing.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines
Not established.

Engineering Controls

No specific controls are needed.

Eye Protection	Skin Protection	Respiratory Protection
Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and shower in work area.	Wear appropriate chemical resistant clothing.	Self-contained breathing apparatus and protective clothing may be required by rescue workers. Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Gas	Colorless	Colorless	N/A	Gas	Slightly ethereal	N/A

Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
-15.7F (-26.5C)	-153.9F (-103C)	85.9 psia (592 kPa abs) at 70F (21.1C)	3.6 (Air=1.0) @ 25 C (77 F)	1.208 @ 77 F(25C)	0.15% @ 25 C	Not available	Not available	Not available	Not available

Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
102.03	C2F4H2	Not available	Not available	Not available	Not available	Not available

Section 10: Stability and Reactivity

Stability	Conditions to Avoid	Incompatible Materials
Stable.	Stable.	Aluminum, CO2 above 1832F (1000C), alloys of more than 2% Mg in the presence of water

Hazardous Decomposition Products	Possibility of Hazardous Reactions
Thermal decomposition or burning may produce fluorine and carbonyl fluoride.	Polymerization may occur.

Section 11: Toxicology Information

Acute Effects

Oral LD50	Dermal LD50	Inhalation
: LC50 1 hr = 100,000 ppmv; LC50 4 hr = 50,000 ppmv	Not available	Asphyxiant. High concentrations can cause headaches, dizziness, drowsiness, and loss of consciousness. Very high concentrations may cause suffocation. Lack of oxygen can kill.

Eye Irritation	Skin Irritation	Sensitization
Vapors may irritate the eyes. The liquid may cause severe corneal injury due to frostbite	Vapors may irritate the skin. Liquid may cause frostbite; harmful amounts may be absorbed if skin contact is prolonged or widespread.	No GHS hazards established. Heavier than air. Possible asphyxiant in high concentrations.

Chronic Effects

Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Not available	Not available	No data	No data

Section 12: Ecological Information

Fate and Transport

Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
1,1,1,2-Tetrafluoroethane	UN3159	2.2	Not applicable	Nonflammable gas	N/A	N/A	N/A

Canadian Transportation of Dangerous Goods

Shipping Name	UN Number	Class	Packing Group / Risk Group
REFRIGERANT GAS R 134a; or 1,1,1,2-TETRAFLUOROETHANE	UN3159	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

CERCLA Sections	SARA 355.30	SARA 355.40
Not available	Not available	Not available

SARA 370.21

Acute	Chronic	Fire	Reactive	Sudden Release
Yes	No	No	No	Yes

SARA 372.65

Not available

OSHA Process Safety

Not available

State Regulations

CA Proposition 65
Not available

Canadian Regulations

WHMIS Classification

N/A

National Inventory Status

US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Listed on inventory.	N/A	N/A

Section 16: Other Information

NFPA Rating
HEALTH=2 FIRE=1 REACTIVITY=0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard