MATERIAL SAFETY DATA SHEET

PRODUCT: **HFC-134a** **1,1,1,2-Tetrafluoroethane**

Chemical Product and Company Identification

Item Name:	R134a
Chemical Name	1,1,1,2-Tetrafluoroethane
Chemical Formula	CH2FCF3
Company's Name:	RemTec International
Company's Street:	1100 Haskins Road
Company's City, State, Zip:	Bowling Green, OH 43402, USA
Company's Info Ph #:	419-867-8990 FAX 419-867-3279
Company's ER Ph #:	PERS-N.America 800-633-8253/International 801-629-0667
Date MSDS Prepared:	12/29/06 Updated: 12/04/2009
MSDS Preparer's Name:	RemTec
MSDS File Number:	MSDS134a
Specification Number:	ARI 700-95

Ingredients/Identity Information

Ingredient:	1,1,1,2-Tetrafluoroethane
Percent:	99.5+
CAS Number:	811-97-2

Hazards Identification

Fire and Explosion Hazard:

Flash Point:	None
Extinguishing Media:	Use media appropriate for surrounding material.
Special fire fighting procedure:	Wear fire fighting protective equipment and full faced self-contained breathing apparatus. Cool fire exposed containers with water spray or fog to cool containers
Unusual fire and Explosive hazards:	Combustion or heat of fire may produce hazardous decomposition products and vapors. Do not reenter area where this material has been released without ventilating to remove products of combustion or decomposition.

Reactivity Data:

Stability:	Yes
Conditions To Avoid:	Open flames and high temperatures

Materials To Avoid:	Alkalis (sodium, potassium), alkali earth metals (magnesium, calcium), and magnesium and alloys containing more than 2% magnesium.
Hazardous Decomposition Products:	Thermal decomposition products include hydrogen fluoride, hydrofluoric acid, and possibly carbonyl fluorides.
Hazardous Poly Occur:	No
Conditions To Avoid (Poly):	None

Health Hazard Data:

Aggravated by Exposure:	Individuals with preexisting cardiac, respiratory, or central nervous system may be more susceptible to overexposure. Using Epinephrine or similar drugs can increase susceptibility to heart irregularities.
Route Of Entry	Inhalation: Yes Skin: No Ingestion: No
Health Hazard Chronic:	None Known
Carcinogenicity NTP/IARC/OSHA:	No
AEL:	1000 ppm, 8 Hr.
Signs/Symptoms Of Over exp:	May cause asphyxiation, heart thumping, apprehension, lightheadedness, feeling of fainting, dizziness, weakness, loss of consciousness and death in high concentrations. Skin or eye contact with the liquid may cause frostbite. Inhalation of high concentration can be harmful or fatal due to oxygen deprivation and/or heart irregularities (arrhythmias). Misuse of the product by deliberately inhaling high concentrations of gas could

Emergency/First Aid Procedures

Eyes:	Flush with water for at least 15 minutes. Get medical attention.
Skin:	In case of skin contact, flush skin with plenty of water for 15 minutes. Treat for frostbite if necessary by gently warming affected area.
Ingestion:	Not applicable
Inhalation:	Remove victim to fresh air. Give symptomatic and supportive care. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Notes to Physician:	The use of epinephrine or similar compounds can increase susceptibility to heart irregulaties.

Fire Fighting Measures

Specific hazards:	Exposure to fire may cause containers to rupture/explode
Flammable	Non-flammable
Hazardous combustion products	If involved in a fire, the following toxic and/or corrosive fumes may be released by thermal decomposition including hydrogen fluoride, carbonyl fluoride and/or carbon monoxide.
Extinguishing media	All known extinguishants can be used.
Fire fighting instructions	Move away from the container and cool with water form a protected position. Self-contained breathing apparatus (SCBA)

and chemically protective clothing should be used if cylinders rupture or release under fire conditions.

Accidental Release Measures	
Steps If Material Released/Spill:	Evacuate area. Keep upwind. Self-contained breathing apparatus (SCBA) and chemically protective clothing should be used if cylinders rupture or release under fire conditions. Ventilate area-especially low places remove open flames and heating elements. Disperse gas with floor level forced air.
Other Precautions:	Avoid eye, and skin contact. Do not breath vapor mists or sprays. Avoid hot surfaces, open flames, cigarette smoking
Neutralizing Agent:	None
Waste Disposal Method:	Try to stop release if possible. Recycle or reclaim if possible. Reclaimed material may be incinerated but toxic and corrosive combustion products (hf & hcl) must be handled appropriately. Dispose of in accordance with local, state and federal regulations.

Precautions for Safe Handling and Storage	
Precautions-Handling/Storing:	Store in tightly closed containers. Keep out of direct sunlight. Keep away from sources of heat and open ignition sources.
Leak Testing	Periodic leak testing is recommended.

Exposure Controls/Personal Protection	
Personal Protection	Ensure adequate ventilation. Keep containers closed tightly. Do not smoke while handling product.
Respiratory Protection:	If engineering controls fail, non-routine use or emergency occurs; use Niosh/MSHA approved respirator or supplied air respirator or SCBA, as required. Use in accordance with 29 CFR 1901.134.
Protective Gloves:	Rubber
Eye Protection:	Safety glasses/chemical splash goggles
Other Protective Equipment:	Clothing to prevent contact if liquid.
Work Hygienic Practices:	Wash hands after use and before eating, drinking, or smoking.

Physical and Chemical Properties	
Appearance And Odor:	Clear, colorless, liquefied gas, slight etheral
Boiling Point:	-15.1^{o}F, -23.2^{o}C
Vapor Pressure (at 77^{o}F):	96 psia
Vapor Density (Air=1):	3.3
Liquid Density at 77^{o}F:	76.44 lb/ft^{3}
Specific Gravity:	1.23 (WATER=1)
Solubility In Water (at 77^{o}F)	.15% wt
% Volatile by volume:	100

Stability and Reactivity	
Stability and reactivity	Stable under normal conditions. Thermal decomposition yields toxic products which

can be corrosive in the presence of moisture.

Toxicological Information

General — No known toxicology effects from this product.

Transportation Information

DOT Proper Shipping Name:	1,1,1,2-Tetrafluoroethane
DOT Hazard Class:	2.2
DOT ID Number:	UN 3159
DOT Label:	Nonflammable Gas
Other transport information	Avoid transport in vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the containers and knows what to do in the event of an accident or an emergency. Before transporting product containers ensue that they are firmly secured and: -cylinder valve is closed and not leaking -valve outlet cap nut or plug (if provided) is correctly connected -valve protection device is correctly connected -there is adequate ventilation -compliance with all local and national regulations.

Regulatory Information

U.S. Federal Regulation

TSCA Inventory Status: Listed

SARA Hazards

Acute:	Yes	Chronic:	Yes	Reactive:	No
Contact:	No	Fire:	No	Pressure:	Yes

NFPA Codes

Heath:	1	Flammability:	0
Reactivity:	0	Other:	0

HMIS Codes

Heath:	1	Flammability:	0
Reactivity:	0	Protection:	X

OSHA requires that you must provide copies of this MSDS to all of your customers who purchase this product.

Other Information

OSHA requires that you must provide copies of this MSDS with shipments of this product.

Details given in this document are for informational purposes only and are believed to be correct. Information contained herein is provided without warranty. RemTec International will not be liable for any damage, which may result from the use or reliance on any information contained herein.