

SECTION 1: IDENTIFICATION

MSDS ID: GTRN-0011

PRODUCT NAME: GENETRON(R) 134a
R134AC, R134AJ, R134AUVC, R134AUVJ

MANUFACTURER: AlliedSignal Incorporated
Fluorocarbons
101 Columbia Turnpike
P.O. Box 1053
Morristown, NJ 07062

INFORMATION PHONE NUMBER: (201) 455-4157
(Monday - Friday 9:00 A.M - 4:30 P.M. EST)

EMERGENCY PHONE NUMBER: (201) 455-2000 (24 Hours/Day, 7 Days/Week)

MSDS DATE OF PREPARATION/REVISION: 03/19/99

SECTION 2: PRODUCT COMPONENTS

HAZARDOUS COMPONENTS	CAS#	PERCENT	EXPOSURE LIMITS
1,1,1,2-Tetrafluoroethane	811-97-2	100	1000 ppm (manufacturer recommended)

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Colorless, volatile liquid with an ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (greater than 250 C), decomposition products may include hydrofluoric acid and carbonyl halides.

POTENTIAL HEALTH EFFECTS:

ACUTE HAZARDS:

INHALATION: Genetron 134a is of low acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

SKIN CONTACT: Irritation would result from a defatting action on tissue.

EYE CONTACT: Liquid contact can cause irritation, which may be severe.

Mist may irritate.

INGESTION: Although ingestion is unlikely, discomfort in the gastrointestinal tract would result from rapid evaporation (boiling) of the material, and consequent evolution of gas. In addition, some of the effects of inhalation would be expected. Necrosis from freezing of tissue could occur.

CHRONIC EFFECTS: None known.

CARCINOGEN: None of the components of this product is listed as a carcinogen or suspected carcinogen by IARC, NTP or OSHA.

SECTION 4: FIRST AID MEASURES

INHALATION: Immediately remove to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Call a physician. Do not give epinephrine (adrenaline).

SKIN CONTACT: Promptly flush skin with water until all the chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. In the absence of water, cover with a clean, soft cloth or similar covering. Call a physician.

EYE CONTACT: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should be lukewarm - not hot), lifting eyelids occasionally to facilitate irrigation. Get immediate medical attention if symptoms persist.

INGESTION: Ingestion is unlikely because of the physical properties of Genetron 134a, and is not expected to be hazardous. Do not induce vomiting unless instructed to do so by a physician.

NOTES TO PHYSICIAN: Because of possible disturbances of cardiac rhythm, catecholamine drugs such as epinephrine should be used with special caution only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION 5: FIRE AND EXPLOSION DATA

FLASH POINT: No flashpoint

FLAMMABILITY LIMITS:

LEL: Not Applicable UEL: Not Applicable

AUTOIGNITION TEMPERATURE: >750 F

EXTINGUISHING MEDIA: Use any standard agent - choose the one most appropriate for the type of surrounding fire (material itself is not flammable).

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

UNUSUAL FIRE HAZARDS: Genetron 134a is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain reactive metals may result in the formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

HAZARDOUS COMBUSTION PRODUCTS: Halogens, halogen acids and possibly carbonyl halides.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Always wear recommended personal protective equipment. Evacuate unprotected personnel. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return until the air has been tested and determined safe, including low-lying areas.

SECTION 7: HANDLING AND STORAGE

Avoid breathing vapors and liquid contact with eyes, skin, or clothing.
Do not puncture or drop cylinders, expose them to open flame or excessive heat.
Use authorized cylinders only.
Follow standard safety precautions for handling and use of cylinders of liquified gases.
Genetron 134a should not be mixed with air above atmospheric pressure for leak testing or any other purpose.
Store in a cool, well-ventilated area of low risk and out of direct sunlight. Protect cylinder and its fittings from physical damage.
Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

RESPIRATORY PROTECTION: None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space where concentration may be

above the recommended exposure limit of 1,000 ppm, use a self-contained, NIOSH-approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH-approved gas mask with organic vapor canister.

GLOVES: Skin contact with refrigerant gas may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with the liquid or gas is anticipated, insulated gloves constructed with PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

EYE PROTECTION: For normal use, wear safety goggles. Where there is a reasonable probability of liquid contact, wear chemical safety goggles.

OTHER PROTECTIVE EQUIPMENT/CLOTHING: Where contact with liquid is likely, impervious boots and clothing should be used in case of spillage or leakage, or if there is the probability of contact with liquid product. High dose-level warning signs are recommended for areas of principal exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Clear, colorless liquid and vapor with a faint ethereal odor. No odor threshold data available.

pH: Neutral	SPECIFIC GRAVITY: Less than 1.22
BOILING POINT (F): -15.1 F	VAPOR PRESSURE: 85.8 mmHg @ 70 F
FREEZING POINT (F): -149.8 F	VAPOR DENSITY: 3.5
SOLUBILITY IN WATER: 0.15%	EVAPORATION RATE: >1 (CCl4=1)
PERCENT VOLATILE: 100%	VISCOSITY: Not applicable

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Do not mix with oxygen or air above atmospheric pressure. Any source of high temperature, such as lighted cigarettes, flames, hot spots, welding may yield toxic and/or corrosive decomposition products.

INCOMPATIBILITY: (Under specific conditions: e.g., very high temperatures and/or appropriate pressures). Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically active metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS: Halogens, halogen acids and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: None known.

SECTION 11: TOXICOLOGICAL INFORMATION

LC50 Inhalation Rat: >500,000 ppm/4hr
Cardiac Sensitization Threshold: 80,000 ppm, NOEL (dog): 50,000 ppm

SECTION 12: ECOLOGICAL INFORMATION

Degradability (BOD): Genetron 134a is a gas at room temperature, therefore, it is unlikely to remain in water.

Octanol Water Partition Coefficient LOG P (octanol/water): 1.06

SECTION 13: DISPOSAL INFORMATION

Disposal must comply with federal, state and local disposal or discharge laws. Dispose of waste Genetron 134a (Tetrafluoroethane) may be subject to federal regulations. User should review their operations, then consult with appropriate regulatory agencies before discharging or disposing of waste material. Disposal by licensed waste disposal company may be necessary.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

SECTION 14: TRANSPORT INFORMATION

U.S. DOT HAZARD CLASSIFICATION

PROPER SHIPPING NAME: 1,1,1,2-Tetrafluoroethane
TECHNICAL NAME: N/A
UN NUMBER: UN3159
HAZARD CLASS/PACKING GROUP: 2.2
LABELS REQUIRED: Non-flammable Gas

DOT MARINE POLLUTANTS: This product does not contains Marine Pollutants as defined in 49 CFR 171.8.

IMDG CODE SHIPPING CLASSIFICATION

DESCRIPTION: 1,1,1,2-Tetrafluoroethane, 2.2, UN3159, IMDG Page 2181
ID NUMBER: UN3159
HAZARD CLASS: 2.2
PACKING GROUP: None
LABELS REQUIRED: 2.2
PLACARDS REQUIRED: Non-Flammable Gas, 2.2

SECTION 15: REGULATORY INFORMATION

EPA SARA 311/312 HAZARD CLASSIFICATION: Acute health, Pressure Hazard

EPA SARA 313: This Product Contains the Following Chemicals

Subject to Annual Release Reporting Requirements Under SARA Title 111, Section 313 (40 CFR 372): None

PROTECTION OF STRATOSPHERIC OZONE: This product is not known to contain or to have been manufactured with ozone depleting substances as defined in 40 CFR Part 82, Appendix A to Subpart A.

CERCLA SECTION 103: This product is not subject to CERCLA reporting requirements as it is sold. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

CALIFORNIA PROPOSITION 65 - This product does not contain chemicals regulated under California Proposition 65.

EPA TSCA INVENTORY: All of the components of this material are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT: All of the ingredients are listed on the Canadian Domestic Substances List.

CANADIAN WHMIS CLASSIFICATION: Class A (Compressed Gas)

EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES (EINECS) All of the ingredients are listed on the EINECS inventory.

AUSTRALIA: All of the ingredients of this product are listed on the Australian Inventory of Chemical Substances.

SECTION 16: OTHER INFORMATION

NFPA RATING (NFPA 704) - FIRE: 0
HEALTH: 2
REACTIVITY: 0