

## MATERIAL SAFETY DATA SHEET

### 1. Product And Company Identification

MSDS ID: MSDS524

PRODUCT NAME: Genetron ® 134A, Genetron ® 134aUV

PRODUCT NUMBER: R134AC, BR134AJ, R134AUVC, BR134AUVJ, BR134AP, BR134AUVP

MANUFACTURER:

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CANADIAN OFFICE:

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MSDS DATE OF PREPARATION/REVISION: 3/17/08

### 2. Composition/Information On Ingredients

Component	CAS No.	Amount
1,1,1,2-Tetrafluoroethane (Norflurane)	811-97-2	99.8-100%
UV Dye (UV Only)	Proprietary	0-0.065%

(See Section 8 for Exposure Limits)

### 3. Hazards Identification

Colorless or slightly yellow, volatile liquid with an ethereal and faint sweetish odor.

### EMERGENCY OVERVIEW

Contents under pressure. Non-flammable material under ambient temperatures and pressures. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Gas reduces oxygen available for breathing. High concentrations may cause asphyxiation. The victim will not realize that he or she is suffocating. Irritating to eyes and skin. At higher temperatures, (greater than 250 C), decomposition products may include corrosive and toxic hydrofluoric acid and carbonyl halides.

### 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. Call a physician immediately.

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. Treat frostbitten areas as needed.

## 5. Firefighting Measures

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). Container may rupture explosively on heating.

HAZARDOUS COMBUSTION PRODUCTS: Halogenated compounds, hydrogen fluoride, carbon oxides and possibly carbonyl halides.

## 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. Avoid skin contact with leaking liquid (risk of frostbite). Unprotected personnel should not return until the air has been tested and determined safe, including low-lying areas.

## 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.

Protect cylinders from sunlight and do not expose to temperatures above 120F.

Do not pierce or burn containers, even empty.

Do not spray on naked flame or any incandescent material.

Use authorized cylinders only.

Follow standard safety precautions for handling and use of cylinders of liquefied 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.

**8. Exposure Controls / Personal Protection**

**EXPOSURE LIMITS**

CHEMICAL	EXPOSURE LIMIT
1,1,1,2-Tetrafluoroethane	1000 ppm TWA AIHA WEEL
Hydrogen Fluoride (decomposition product as F)	3 ppm TWA OSHA PEL 0.5 ppm TWA skin ACGIH TLV 2 ppm Ceiling ACGIH TLV

**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 positive pressure self-contained breathing apparatus or supplied air respirator.

**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 glasses. Where there is a reasonable probability of liquid contact, wear chemical safety goggles and/or face shield.

**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. Provide eyewash stations and quick-drench shower facilities at convenient locations..

**9. Physical and Chemical Properties**

**APPEARANCE AND ODOR:** Clear, colorless or slightly yellow liquid and vapor with a faint ethereal odor. There is no odor threshold data for this product.

pH: Neutral

BOILING POINT (F): -15.2°F

MELTING POINT (F): -150°F

SOLUBILITY IN WATER: 0.15%

PERCENT VOLATILE: 100%

COEFFICIENT OF WATER/OIL DISTRIBUTION: 1.06

SPECIFIC GRAVITY: 1.2

VAPOR PRESSURE: 85.8 psia @ 70°F

VAPOR DENSITY: 3.5

EVAPORATION RATE: <1

VISCOSITY: Not applicable

**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:** Halogenated compounds, hydrogen fluoride, carbon oxides and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION: Will not occur  
CONDITIONS TO AVOID: None known.

## 11. Toxicological Information

### POTENTIAL HEALTH EFFECTS:

#### ACUTE HAZARDS:

**INHALATION:** Genetron 134a is of low acute toxicity in animals. Vapors may cause drowsiness and dizziness. 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. Liquid contact could cause frostbite.

**EYE CONTACT:** Liquid contact can cause irritation, which may be severe. Mist may irritate. May cause frostbite.

**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 ACGIH, IARC, NTP or OSHA.

#### Acute Toxicity Values:

Product:

LC50 Inhalation Rat: >500,000 ppm/4hr

Cardiac Sensitization Threshold: 80,000 ppm, NOEL (dog): 50,000 ppm

Not mutagenic in *in-vitro* and *in-vivo* assays.

Chronic NOEL: 40,000 ppm rat

NOEL = no observable effect level.

## 12. Ecological Information

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

**Bioaccumulation:** accumulation in aquatic organisms is unlikely.

This [product contains greenhouse gases which may contribute to global warming. DO NOT vent to atmosphere. To comply provisions of the Clean Air Act, any residual must be recovered.

## 13. Disposal Considerations

Disposal must comply with federal, state and local disposal or discharge laws. Dispose of waste Genetron 134a (Tetrafluoroethane) may be subject to federal regulations. This product is subject to US Environmental Protection Agency Clean Air Act regulations, Section 608 in 40 CFR Part 82 regarding refrigerant recycling. 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.

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

CANADIAN TDG CLASSIFICATION

PROPER SHIPPING NAME: 1,1,1,2-Tetrafluoroethane, 2.2, UN3159  
ID NUMBER: UN3159  
HAZARD CLASS: 2.2  
PACKING GROUP: N/A  
LABELS REQUIRED: Non-Flammable Gas  
PLACARDS REQUIRED: Non-Flammable Gas

**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 III, 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

This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

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.

### 16. Other Information

NFPA RATING (NFPA 704) - FIRE: 1      HEALTH: 1      REACTIVITY: 0

REVISION SUMMARY: Section 2: Added ingredient synonym.  
Section 3: Changed hazards.  
Section 4: Changed ingestion first aid and notes to physician.  
Section 5: Changed hazardous combustion products.  
Section 7: Added precautions.  
Section 8: Changed eye and respiratory protection.  
Section 9: Changed boiling and melting point and specific gravity  
Section 10: Changed hazardous decomposition products.  
Section 11: Changed toxicity values.  
Section 12: Added greenhouse gas information.  
Section 13: Revised disposal guidance.

This MSDS is directed to professional users and bulk handlers of the product. Consumer products are labeled in accordance with Federal Hazardous Substances Act regulations.

While Prestone Products Corporation believes that the data contained herein are factual and the opinions expressed are those of qualified experts regarding the results of the tests conducted, the data are not to be taken as a warranty or representation for which Prestone Products Corporation assumes legal responsibility. They are offered solely for your consideration, investigation and verification. Any use of these data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

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