MATERIAL SAFETY DATA SHEET
Finished Product

Date-Issued: 12/03/2002
MSDS Ref. No: RX1100-10, -12
Date-Revised: 02/23/2009
Revision No: 1

ECG Inert Dusting Gas

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1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT DESCRIPTION: ECG Inert Dusting Gas
PRODUCT CODE: RX1100-10, -12
GENERIC NAME: HFC-134a
CHEMICAL FAMILY: Hydrofluorocarbons
ACTIVE INGREDIENT(S): 1,1,1,2-Tetrafluoroethane

MARKETER
NTE Electronics, Inc.
44 Farrand Street
Bloomfield, NJ 07003

Phone: 973-748-5089

24 HR. EMERGENCY TELEPHONE NUMBERS

CHEMTREC (U.S.): (800) 424-9300
CANUTEC: (613) 996-6666
Emergency Phone: 1-800-631-1250 8:00 am - 5:00 pm EST

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2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Clear, Colorless, Volatile Liquid
IMMEDIATE CONCERNS: Warning! High concentrations of vapor can reduce oxygen available for breathing. Harmful if inhaled. May decompose on contact with flames or extremely hot metal surfaces to produce toxic an corrosive products.

POTENTIAL HEALTH EFFECTS

EYES: Liquid contact can cause irritation, which may be severe.
SKIN: Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).
INHALATION: High concentrations in immediate area can displace oxygen and can cause dizziness, unconsciousness, and possibly death with longer exposure. Keep people away from such vapors without self-contained breathing apparatus.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

EYES: can cause severe eye irritation.
SKIN: Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite (“cold” burn).
INHALATION: High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis and loss of consciousness).
ACUTE TOXICITY: Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result.

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3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt. %	CAS	EINECS
1,1,1,2-Tetrafluoroethane	100	811-97-2	212-337-0

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4. FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water. Get medical attention, if irritation persists.
SKIN: In case of cold burns (frostbite) caused by rapidly expanding gas or vaporizing liquids, get medical attention promptly.
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.
INHALATION: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.
NOTES TO PHYSICIAN: Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

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5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: Not Applicable
FLAMMABLE LIMITS: None *
AUTOIGNITION TEMPERATURE: > 750°C (1382°F)
FLAMMABLE CLASS: Not Applicable
FLAME PROPAGATION OR BURNING RATE OF SOLIDS: Not Applicable
EXTINGUISHING MEDIA: As appropriate for combustibles in area.
EXPLOSION HAZARDS: This product is not flammable at ambient temperatures and atmospheric pressure. However, this material may become combustible when mixed with air under pressure and exposed to strong ignition sources.
FIRE FIGHTING PROCEDURES: Use water spray cool containers.
FIRE FIGHTING EQUIPEMENT: As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.
COMMENTS: * Based on ASHRAE Standard 34 with match ignition.

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6. ACCIDENTAL RELEASE MEASURES

GENERAL PROCEDURES: Isolate hazard area. Keep unnecessary and unprotected personnel from entering.
RELEASE NOTES: Spills and releases may have to be reported to Federal and/or local authorities.

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7. HANDLING AND STORAGE

HANDLING: Follow standard safety precautions for handling and use of compressed gas cylinders.
STORAGE: Store in a cool place in original container and protect from sunlight.

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8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

EXPOSURE GUIDELINES:

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)							
		EXPOSURE LIMITS					
		OSHA PEL		ACGIH TLV		Supplier OEL	
Chemical Name		**ppm**	**mg/m^3**	**ppm**	**mg/m^3**	**ppm**	**mg/m^3**
1,1,1,2-Tetrafluoroethane	**TWA**	NE		NE		1000 ppm [1]	[1]
OSHA TABLE COMMENTS: **1.** * (AEL) = Acceptable Exposure Limit as established by the manufacture.							

ENGINEERING CONTROLS: Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product..

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Wear safety glasses with side shields (or goggles) and a face shield.

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

RESPIRATORY: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name	Boiling Point (°C)	Freezing Point (°C)	Solubility in Water	Specific Gravity
1,1,1,2-etrafluoroethanel	-26.4	-101	NEGLIGIBLE	1.21

PHYSICAL STATE: Gas
ODOR: Faint ethereal odor
pH: Neutral
PERCENT VOLATILE: 100 at 20˚C (68˚F)
VAPOR PRESSURE: 85.5 psi at 21.1˚C (70˚F)
VAPOR DENSITY: 3.5 (Air = 1)
BOILING POINT: -26.2°C (-15.1°F)
FREEZING POINT: -101°C (-149.8°F)
FLASHPOINT AND METHOD: Not Applicable
SOLUBILITY IN WATER: Negligible
EVAPORATION RATE: > 1 (CCL4 = 1)
SPECIFIC GRAVITY: 1.220 (water = 1) at 20˚C (68˚F)

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10. STABILITY AND REACTIVITY

STABLE: Yes
HAZARDOUS POLYMERIZATION: No
STABILITY: Stable.
POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID: Stable. However, may decompose if heated.
HAZARDOUS DECPMPOSITION PRODUCTS: When exposed to high temperatures or flames this product may form hydrochloric and hydrofluoric acids - possibly carbonyl halides.
INCOMPATIBLE MATERIALS: Chemically active metals: potassium, calcium, powdered aluminum, magnesium and zinc.

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11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	INHALATION LC_{50} (rat)
1,1,1,2-Tetrafluoroethane	> 500000 ppm

INHALATION LC_{50}: > 500000 ppm, 4-hour.
CHRONIC: Chronic NOEL - 10,000 ppm
SUBCHRONIC: Subchronic inhalation (rat) NOEL - 50,000 ppm

CARCINOGENICITY

Chemical Name	NTP Status	IARC Status	OSHA Status
1,1,1,2-Tetrafluoroethane	NOT LISTED	NOT LISTED	NOT LISTED

SENSITIZATION: cardiac sensitization threshold (dog) 80,000 ppm. NOEL - 50,000 ppm.
TERATOGENIC EFFECTS: NOEL (rat and rabbit) - 40,000 ppm.
MUTAGENICITY: Collective data indicate non-mutagenic.

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12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: Degradability (BOD): This material is a gas at room temperature; therefore, it is unlikely to remain in water.
DISTRIBUTION: Octanol Water Partition Coefficient: Log P = 1.06

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13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Federal, State, and Local laws governing disposal of materials can differ. Ensure compliance with proper authorities before disposal.
GENERAL COMMENTS: 1,1,1,2-tetrafluoroethan is subject to U.S. Environmental Protection Agency Clean Air Act Regulations, Section 608 in 40 CFR Part 82 regarding refrigerant recycling..

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14. TRANSPORATION INFORMATION

DOT (DEPARTMENT OF TRANSPORATON)
PROPER SHIPPING NAME: CONSUMER COMMODITY, ORM-D, DOT-SP 10232
TECHNICAL NAME: 1,1,1,2-Tetrafluoroethane
PRIMARY HAZARD CLASS/DIVISION: 9
UN/NA NUMBER: N/A
PACKING GROUP: N/A
NAERG: # 12
OTHER SHIPPING INFORMATION: Must have a copy of the DOT-SP-10232 with each shipment.

SPECIAL SHIPPING NOTES: Domestic Shipments Only. For International shipments use 1,1,1,2-Tetrafluoroethane, UN3159, 2.2; Pkg. Instr. 200.; Authorization: DOT-SP 10232.; **NOTE:** Copy of the Exemption is required with all shipments.; HAZARD LABEL: Non-Flammable Gas.; [“LTD QTY of class 2” when < 120 ml (5 oz)]

ROAD AND RAIL (ADR/RID)
KEMLER NUMBER: UN3159
HAZARD CLASS: 2.2

AIR (ICAO/IATA)

SHIPPING NAME: CONSUMER COMMODITY, ORM-D-AIR, DOT-SP 10232
UN/NA NUMBER: ID8000
PRIMARY HAZARD CLASS/DIVISION: 9
PACKING GROUP: N/A

VESSEL (IMO/IMDG)

SHIPPING NAME: CONSUMER COMMODITY, ORM-D-AIR, DOT-SP 10232
UN/NA NUMBER: ID8000
PRIMARY HAZARD CLASS/DIVISION: 9
PACKING GROUP: NA
LIMITED QUANTITY: 120 mL

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15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: IMMEDIATE / DELAYED
PRESSURE GENERATING: Yes **ACUTE:** Yes
313 REPORTABLE INGREDIENTS: Not considered a SARA 313 “Toxic Chemical”.

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA REGULATORY: Releases to air, land, or water which exceeds the RQ must be reported to the National Response Center [(800) 424-8802] and to yor Local Emergency Planning Committee.

TSCA (TOXIC SUBSTANCE CONTROL ACT)

Chemical Name	CAS
1,1,1,2-Tetrafluoroethane	811-97-2

TSCA REGULATORY: This product does not contain any chemicals known to the State of California to cause cancer..

CLEAN AIR ACT

Chemical Name	Wt. %	CAS
1,1,1,2-Tetrafluoroethane	100%	811-97-2

CALIFORNIA PROPOSITION 65: This product does not contain any chemicals known to the State of California to cause cancer.

CANADA

WHMIS CLASS: Class A, Class D2B.
DOMESTIC SUBSTANCE LIST (INVENTORY): All components of this product are listed on the Canadian DSL.

EUROPEAN COMMUNITY

EEC LABEL SYMBOL AND CLASSIFICATION
Currently not classified according to EEC Directives.

GENERAL COMMENTS: 1,1,1,2-tetrafluoroethane is subject to U.S. Environmental Agency Clean Air Act Regulations, (40CFR Part 82).

COMMENTS: WARNING: Contains 1,1,1,2-tetrafluoroethane (HFC-134a), a greenhouse gas which may contribute to global warning.

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16. OTHER INFORMATION

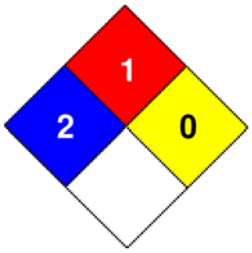
APPROVED BY: Pierce A. Pillon **TITLE:** Chemist

REVISION SUMMARY: Revision #: 1 This MSDS replaces the December 03, 2002 MSDS.

HMIS RATING

HEALTH:	1
FLAMMABILITY:	1
PHYSICAL HAZARD:	0
PERSONAL PROTECTION:	

NFPA CODES



NFPA STORAGE CLASSIFICATION: Diamond Legend: Left = Health; Top = Fire; Right = Reactivity; Bottom = Special Hazards

DATA SOURCES: Code of Federal Regulations (CFR) The Sigma-Aldrich Library OF Regulatory and Safety Data OSHA Hazard Communication Standard (29CFR1910.1200) Various Federal, State and Local Regulations

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