FALCON®

Material Safety Data Sheet

HSDS1247 134a

SECTION I – CHEMICAL PRODUCT AND COMPANY INFORMATION

Trade Name: 134a
Chemical Name: 1,1,1,2-Tetrafluoroethane
FSPID: Front 134a
Model Numbers: DPN, DPNR, DPNXL, 911, 911R, 911C FNR, FC4N, MSN, MSNR, PWH,PWHR PBSHN, PBSHNCSH, PBSHNR, SH3 ~~SHSR~~ SSN, SSNR, TAD4N, SSA1N, SSA2N.
Emergency Phone: **Chemtrec 1-800-424-9300**

Chemical Manufacturer: DuPont and Honeywell

Product Manufacturer: Falcon Safety Products, Inc.
Address: 25 Chubb Way
Branchburg, NJ 08876
Phone: 1-908-707-4900

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

Material	CAS #	%
1,1,1,2-Tetrafluoroethane	811-97-2	100%

SECTION III - HAZARDS IDENTIFICATION

Potential Health Effects:

Potential Health Effects – Inhalation of high concentrations of vapor is harmful and may cause irregular heart beat unconsciousness or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

Human Health Effects – Overexposure by inhalation to very high concentrations may cause temporary alterations of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation. Skin contact may cause frostbite.

Additional Health Effects – Increased susceptibility to the effects of this material may be observed in persons with pre-existing disease of the: central nervous system, cardiovascular system.

Carcinogenicity Information – None of the components present in this material at concentrations equal to or greater than 0.1% is listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

SECTION IV - FIRST AID

Inhalation - If high concentrations are inhaled, immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Skin Contact – Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

Eye Contact – Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbit water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

Ingestion - Ingestion is not considered a potential route of exposure.

Notes to Physicians - 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.

SECTION V - FIRE FIGHTING MEASURES

Flash Point	Flammable Limits In Air % by Volume		
	LEL	UEL	Autoignition
No Flash Point	None fer ASTM E681	None fer ASTM E681	>743°C (>1369°F)

SECTION V - FIRE FIGHTING MEASURES Continued.....

Fire and Explosion Hazards: – Aerosol cans may erupt with force at temperatures above 49°C (120°F) Decomposition may occur.

Note:

HFC-134a is not flammable in air temperatures up to 100°C (212°F) at atmospheric pressure. However, mixtures of HFC-134a with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. HFC-134a can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing HFC-134a and air, or HFC-134a in an oxygen enriched atmosphere become combustible depends on the inter-relationship of : 1.The temperature 2. The pressure and 3. The proportion of oxygen in the mixture. In general HFC-134a should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. Experimental data have also been reported which indicated combustibility of HFC-134a in the presence of certain concentrations of chlorine.

Extinguishing Media - As appropriate for combustibles in area.
Hazardous Combustion Products - Smoke, fumes and oxides of carbon.
Special Fire Fighting Procedures - Cool aerosol cans with water spray. Self-contained breathing apparatus (SCBA) may be required if aerosol cans rupture or release under fire conditions.

SECTION VI - ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel) - NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Ventilate area, especially low or enclosed places where heavy vapors might collect. Remove open flames. Use self-contained breathing apparatus (SCBA) if large spill or leak occurs.

SECTION VII – HANDLING AND STORAGE

Handling (Personnel) - Use with sufficient ventilation to keep employee exposure below recommended limits.

Handling (Physical Aspects) - HFC-134a should not be mixed with air for leak testing or used for any other purpose above atmospheric pressure. See Flammable Properties Section. Contact with chlorine or other strong oxidizing agents should also be avoided.

Storage - Clean, dry area. Do not heat above 49°C (120°F).

SECTION VIII - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point	-26.5°C (-15.7°F) @ 736 mm Hg	Odor	Slight ethereal
Vapor Pressure	96 psia at 25°C (77°F)	Form	Liquefied gas
Vapor Density	3.60 (Air = 1.0) at 25°C (77°F)	Color	Colorless
% Volatiles	100 WT %	Density	1.21 g/cc at 25°C (77°F) - Liquid
Solubility in Water	0.15 WT% @ 25°C (77°F) and 14.7 psia	Specific Gravity	1.208 @ 77°F (25°C)
Evaporation Rate	(CCL4 = 1); greater than 1		

SECTION IX – STABILITY AND REACTIVITY

Chemical Stability - Material is stable. However, avoid open flames and high temperatures.
Incompatibility with Other Materials - Incompatible with alkali or alkaline earth metal.
Decomposition - Decomposition products are hazardous. This material can be decomposed by high **temperatures** (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and carbonyl fluoride.
Polymerization - Polymerization will not occur.

SECTION X – ECOLOGICAL INFORMATION

Aquatic Toxicity: 48 hour EC50 – Daphnia magna: 980 mg/L
96 hour LC50 – Rainbow trout: 450 mg/L

SECTION XI – DISPOSAL CONSIDERATIONS

Contaminated HFC-134a can be recovered by distillation or removed to a permitted waste disposal facility. Comply with Federal, State and Local regulations

SECTION XII - TRANSPORTATION INFORMATION

Shipping Information

Proper Shipping Name	Consumer Commodity	DOT/IMO Label
1,1,1,2-TETRAFLUOROETHANE	ORM-D	NONFLAMMABLE GAS

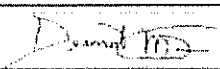
PERSONAL PROTECTIVE EQUIPMENT REQUIRED: NONE

SECTION XIII – DISCLAIMER

Falcon Safety Products, Inc. expressly disclaim all express or implied warranties for merchantability and fitness for a particular purpose, with respect to the product or information provided herein.

All information appearing herein is based upon data obtained from the manufacturer. While the information is believed to be accurate, Falcon Safety Products, Inc. makes no representation as to its accuracy of sufficiency. Conditions of use are beyond Falcon Safety Products, Inc. control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risk of their use, handling and disposal of the product, or from the publication, or use of, or reliance upon, information contained herein. This information relates only to the product designated here and does not relate to its use in combination with any other material or in any other process. This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

SECTION XIV – PREPARATION INFORMATION

Signature	Printed Name	Title	Revision Date
	Dermot McLeer	Technical Manager	01/17/03

End of MSDS

U.S. Department
of Transportation
**Research and
Special Programs
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

JUL 19 2004

Mr. Vincent Kierstead
Sexton Can Company
23 East Street, Suite 301
Cambridge, MA 02141

Dear Mr. Kierstead:

Enclosed is the 11th revision of DOT-E 10232. Please note that a typographical error was corrected in paragraph 4 by changing the section citation to read "173.304(d)". If you have any questions or concerns, please contact me at (202) 366-4535.

Sincerely,

R. Ryan Posten
Exemptions Program Officer
Office of Hazardous Materials
Exemptions and Approvals

U.S. Department
of Transportation

**Research and
Special Programs
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

JUL 19 2004

DOT-E 10232
(ELEVENTH REVISION)

EXPIRATION DATE: October 31, 2004

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Sexton Can Company, Inc.
Cambridge, MA

2. PURPOSE AND LIMITATIONS:

a. This exemption authorizes the manufacture, mark, sale and use of non-DOT specification packagings conforming in part with the DOT Specification 2Q, except as specified herein, for the transportation in commerce of the material authorized in this exemption. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.

b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.304(d), 173.306(a)(3) and 175.3 in that non-DOT specification cylinders are not authorized, except as specified herein.

5. BASIS: This exemption is based on the application of Sexton Can Company, Inc. dated January 15, 2003, submitted in accordance with § 107.105.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identification Number	Packing Group
Refrigerant gases, n.o.s.	2.2	UN1078	N/A
1,1,1,2-Tetrafluoroethane	2.2	UN3159	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is a non-refillable non-DOT specification inside metal container conforming with Sexton Can Company drawing No. LP-86-123 dated August 31, 2001, on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). The cylinder must be in conformance with DOT Specification 2Q (§ 178.33a), except as follows:

§ 178.33a-2 Type and size.

(a) * * *

(b) The maximum capacity of the containers manufactured under this exemption may not exceed 40 cubic inches (22.4 fluid ounces). The maximum diameter may not exceed 3 inches.

§ 178.33a-6 Manufacture.

(a) * * *

(b) * * *

(1) * * *

(2) Side seams. Not permitted.

(c) Ends: The ends shall be designed to withstand pressure and bottom end is fitted with a pressure relief device (PRD).

§ 178.33a-8 Tests.

Burst Test - For qualification burst tests, each 5000 containers or less, successively produced as a batch or part thereof shall constitute a lot. Two containers, one with a PRD and one without a PRD, taken randomly from each lot and complete with the ends assembled must be pressure tested to destruction. The burst pressure of containers fitted with a bottom PRD may not be below 250 psig. The burst pressure of containers without a bottom PRD may not be less than 370 psig. If either of the test container fails to meet the above requirements, the lot shall be rejected. However, an additional 5 randomly selected pairs of containers from that lot may be burst tested to qualify that lot. If any of the additional test containers fail the burst test, that lot must be rejected.

§ 178.33a-9 Marking.

Applies except that the container must be marked with "DOT-E 10232" in lieu of "DOT 2Q".

b. OPERATIONAL CONTROLS - Each packaging must be prepared and shipped in accordance with the following:

(1) The filling density may not exceed 87 percent.

(2) Prior to initial shipment of the filled containers, each completed container must be heated until the pressure in the container is equivalent to the equilibrium pressure of the lading at 130°F. Lading equilibrium pressure may not exceed 200 psig at 130°F. Liquid content of lading may not completely fill the container at 130°F. Acceptable containers must show no evidence of leakage, distortion or other defect.

(3) The container must be packed in a strong outside packaging as prescribed in § 173.301(a)(9).

(4) Each outside packaging must be marked "INSIDE CONTAINERS COMPLY WITH DOT-E 10232".

(5) Containers filled with a material meeting the definition of a "consumer commodity" in § 171.8 may be reclassed as an ORM-D and shipped as "consumer commodity" in accordance with § 173.306(h). These outside packagings are not required to be marked "INSIDE CONTAINERS COMPLY WITH DOT-E 10232" as specified above in paragraph 7(c)(4).

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this exemption for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this exemption.

b. A person who is not a holder of this exemption, but receives a package covered by this exemption, may reoffer it for transportation provided no modification or change is made to the package or its contents and it is offered for transportation in conformance with this exemption and the HMR.

c. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

d. Each packaging manufactured under the authority of this exemption must be marked with a registration symbol designated by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility.

e. A current copy of this exemption must be maintained at each facility where the package is manufactured under this exemption. It must be made available to a DOT representative upon request.

f. Test data obtained under the qualification burst test (§178.33a-8) of this exemption, must be kept on file and be made available upon request by OHMEA.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only, and passenger-carrying aircraft.

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel, aircraft or motor vehicle used to transport packages covered by this exemption. The shipper shall furnish a copy of this exemption to the air carrier before or at the time the shipment is tendered.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
- Persons operating under the terms of this exemption must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
- Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must also inform the AAHMS, in writing, as soon as practicable of any incidents involving the package and shipments made under this exemption.

Issued in Washington, D.C.:

R. Ben Rob

JUL 19 2004
(DATE)

Robert A. Mcguire
Associate Administrator for
Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590. Attention: DHM-31.

Copies of this exemption may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/exemptions Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: cwf/am