



# Material Safety Data Sheet

134a

## 1. Chemical Product and Company Identification

**Product Trade Name:** Falcon Signal Horns

**Chemical Family:** 1,1,1,2-Tetrafluoroethane  
**FSP Model No:** 911, 911R, 911C, 911PSH, MSN, MSNR, SSN, SSNR, SSCN, TAD4N, SSA1N, SSA2N, FNR, FC4N, PBNJC, PBNJR, PBSHN, PBSHNCN, PBSHNCNH, PBSHNR, PBSHNRCN, PWH, PWHR, PWHCN, PWHRCN, SH3, SH3R, SH3CN, SH3RCN.

**Chemical Manufacturer:** Dupont Or Honeywell  
**Address:**

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

**Emergency Telephone USA: CHEMTREC (800) 424-9300**

## 2. Composition/Information on Ingredients

Chemical Name	Wt.%Range	TLV Units
Tetrafluoroethane	99.0	1000 ppm

CAS #811-97-2

All components of this material are listed on the TSCA inventory.

## 3. Hazard Identification

**Emergency Overview:** Clear colorless liquefied gas. Nonflammable. Liquid acts as a refrigerant and exposure of unprotected skin to liquid can cause frostbite. Keep away from children.

### Potential Health Effects

#### INHALATION

Gross overexposure may cause: Central nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness. Irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting, dizziness, weakness, sometimes progressing to loss of consciousness and death. Suffocation, if air is displaced by vapors.

#### SKIN CONTACT

ETHANE, 1,1,1,2-TETRAFLUORO  
 Immediate effects of overexposure may include: Frostbite, if liquid or escaping vapor contacts the skin.

#### EYE CONTACT

ETHANE, 1,1,1,2-TETRAFLUORO  
 "Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes.

#### ADDITIONAL HEALTH EFFECTS ETHANE, 1,1,1,2-TETRAFLUORO

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% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

#### Medical Conditions Aggravated by Exposure:

Preexisting disease of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposures.

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### 4. First Aid Measures

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- Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a doctor.
- Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse. Treat for frostbite if necessary by gently warming affected area.
- Eyes:** Immediately flush with water. Remove any contact lenses and continue flushing for 15 minutes, lifting eyelids occasionally until no evidence of the chemical remains. If irritation develops or persists call a physician.
- Ingestion:** Not considered a potential route of exposure. Treat for possible frostbite. Swallowing less than an ounce of material is unlikely to cause significant harm. For larger amounts, do not induce vomiting. Call a physician.

#### Note to Attending 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.

There is no specific antidote to overexposure. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. Immediate medical attention for acute overexposure is required.

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### 5. Firefighting Measures

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- Flash Point:** Will not burn.
- Autoignition Temperature:** > 750° C
- Flammable Limits in Air:** LEL/UEL: Not Applicable.
- Extinguishing Media:** Use dry chemical, "alcohol" foam, CO<sub>2</sub> or water.

#### Special Firefighting Procedures:

Evacuate personnel. Wear self contained breathing apparatus (SCBA) and full protective equipment. Keep containers cool. Containers build pressure under fire conditions causing violent bursting and dangerous propelling of container.

Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of torch flames. This flame effect will only occur in concentrations of product well above the recommended exposure limit, therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames. HFC-134a is not flammable in air at temperatures up to 100 deg. C (212 deg. 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. For example HFC-134a should NOT be mixed with air under pressure for leak testing or other purposes.

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### 6. Accidental Release Measures

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**Spill or Leak:** Although the chances of a large spill or leak is unlikely in aerosol containers, in the event of such an occurrence, evacuate area. Protected personnel should remove ignition sources and shut off fire sources. Provide ventilation.

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## 7. Handling and Storage

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Avoid breathing vapors or mist. Keep containers closed. Use only with adequate ventilation. Avoid repeated or prolonged contact with eyes, skin or clothing. Wash thoroughly after handling. Do not store in direct sunlight. Store in cool dry place, away from heat, sparks or flames which may generate toxic decomposition products. Vapors are heavy and may concentrate in low poorly ventilated areas.

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## 8. Exposure Controls/Personal Protection

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**Respiratory Protection:** Use only with adequate ventilation. Keep container closed. Use approved NIOSH self-contained or supplied air respirators for emergencies and in situations where air may be displaced by vapors.

**Eye Protection:** Use chemical protective safety glasses.

**Protective Clothing:** Where there is potential for skin contact, use appropriate impervious gloves, apron, pants and jacket.

**Exposure Guidelines:** Applicable Exposure Limits.

Tetrafluoroethane:

PEL (OSHA)	none established
TLV (ACGIH)	none established
AEL (DuPont)	1000 ppm, 8 & 12 hour TWA
WEEL (AIHA)	1000 ppm, 8 hour TWA

**NFPA, NPCA-HIMIS RATING:**

Health	1
Flammability	0
Reactivity	1

Personal Protection rating to be supplied by user depending on use conditions.

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## 9. Physical and Chemical Properties

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<b>Physical Form:</b>	Liquefied Gas
<b>Odor:</b>	Slight Ethereal
<b>Boiling Point:</b>	-26.5° C / -15.7° F
<b>pH:</b>	Not Applicable
<b>Solubility in Water:</b>	0.15 wt.% @ 25°C (77°F) @ 14.7 psia.
<b>Specific Gravity:</b>	1.208 @ 25° C / 77° F
Liquid Density	1.21 g/cm <sup>3</sup> @ 25° C (77° F)
<b>% Volatile by Weight:</b>	100
<b>Vapor Pressure:</b>	96 psia @ 25° C / 77° F
<b>Vapor Density (air=1):</b>	3.6 @ 25° C / 77° F

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## 10. Reactivity

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**Chemical Stability:** Material is stable.

**Conditions to Avoid:** Avoid open flames and high temperatures

**Incompatibilities:** Incompatible with alkali or alkaline earth metals - powdered Al, Zn, Be, etc.

**Decomposition Products:** Decomposition products are hazardous. High temperatures (open flames, glowing metal surfaces, etc.) will decompose this material forming hydrofluoric acid and possibly carbonyl fluoride. These materials are toxic and irritating. Contact should be avoided.

**Hazardous Polymerization:** Will not occur.

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**11. Toxicological Information**

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**Animal Data**

ETHANE, 1,1,1,2-TETRAFLUORO

**Eye:** A short duration spray of vapor produced very slight eye irritation.

**Skin:** Animal testing indicates this material is a slight skin irritant, but not a skin sensitizer.

**Inhalation:** 4 hour, ALC, rat: 567,000 ppm.

Single exposure caused : Cardiac sensitization, a potentially fatal disturbance of heart rhythm associated with a heightened sensitivity to the action of epinephrine.

Lowest-Observed-Adverse-Effect-Level for cardiac sensitization : 75,000 ppm. Single exposure caused: Lethargy, Narcosis, Increased respiratory rates. These effects were temporary. Single exposure to near lethal doses caused: Pulmonary edema. Repeated Exposure caused: Increased adrenals, liver, spleen weight. Decreased uterine, prostate weight. Repeated dosing of higher concentrations caused: the following temporary effects- Tremors, Incoordination.

**CARCINOGENIC, DEVELOPMENTAL, REPRODUCTIVE, MUTAGENIC EFFECTS:**

In a two-year inhalation study HFC-134a, at a concentration of 50,000 ppm produced an increase in late-occurring benign testicular tumors, testicular hyperplasia and testicular weight. The no effect level for this study was 10,000 ppm. Animal data shows slight fetotoxicity but only at exposure levels producing other toxic effects in the adult animal. Reproductive data on male mice show: No change in reproductive performance. Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. In animal testing, this material has not caused permanent genetic damage in reproductive cells of mammals (has not produced heritable genetic damage).

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**12. Ecological Information**

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**Aquatic Toxicity:**

48 hour EC50 - Daphnia magna: 980 mg/L

96 hour LC50 - Rainbow Trout: 450 mg/L

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**13. Disposal Considerations**

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**Waste Disposal:** Recover by distillation or remove to a permitted waste disposal facility. Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations.

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**14. Transportation Information**

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**Transport for Aerosol Packaging:**

Ground Transport: Consumer Commodity ORM-D

Air Transport: Refrigerant Gas, N.O.S. (Tetrafluoroethane), UN1078, Class 2.2, Pkg.Group N/A, Pkg.Instr.200, Authorization: per DOT-E-10232. NOTE: Exemption copy required with shipping papers. Hazard Label: Nonflammable Gas

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**15. Regulatory Information**

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**Section 313 Supplier Information:**

This material contains the following toxic chemicals subject to the emergency reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40 CFR 372:

<b>CAS#</b>	<b>Chemical Name</b>	<b>% by Weight</b>
-	none	-

*This information must be included in all MSDSs that are copied and distributed for this material.*

*California V.O.C. Data: This product contains 0 grams total VOC per liter.*

**Title III Hazard Communications Sections 311, 312**

Acute	Yes
Chronic	Yes
Fire	No
Reactivity	No
Pressure	Yes

**HAZARDOOUS CHEMICAL LIST**

SARA Extremely Hazardous Substance: No

CERCLA Hazardous Substance : No

SARA Toxic Chemical : No

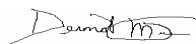
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**16. Other Information**

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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 or 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.

	Dermot McLeer	Technical Manager	02/08/2005
Signature	Printed Name	Title	Revision Date

June 8, 2006



U.S. Department  
of Transportation

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

**Pipeline and  
Hazardous Materials  
Safety Administration**

DOT-SP 10232  
(THIRTEENTH REVISION)

EXPIRATION DATE: May 31, 2010

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: ITW Sexton  
(Former Grantee: Sexton Can Company, Inc.)  
Cambridge, MA
2. PURPOSE AND LIMITATIONS:
  - a. This special permit 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 special permit. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
  - b. The safety analyses performed in development of this special permit 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 special permit is based on the application of Sexton Can Company, Inc. dated May 30, 2006, submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identi- fication 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 Special Permits and Approvals (OHMSPA). 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 special permit 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-SP 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-SP 10232".
- (5) Containers filled with a material meeting the definition of a "consumer commodity" in § 171.8 may be reclassified as an ORM-D and shipped as "consumer commodity" in accordance with § 173.306(h). These outside packagings are not required to be marked

**June 8, 2006**

"INSIDE CONTAINERS COMPLY WITH DOT-SP 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 special permit for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this special permit.

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

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

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

e. A current copy of this special permit must be maintained at each facility where the package is manufactured under this special permit. 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 special permit, must be kept on file and be made available upon request by OHMSPA.

g. Packagings permanently marked 'DOT-E 10232', prior to October 1, 2007 may continue to be used under this special permit for the remaining service life of the packaging or until the special permit is no longer valid. Packagings marked on or after October 1, 2007 must be marked 'DOT-SP 10232'.

h. Shipping papers displaying 'DOT-E 10232' may continue to be used until October 1, 2007, provided the special permit remains valid.

**June 8, 2006**

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 special permit must be carried aboard each cargo vessel, aircraft or motor vehicle used to transport packages covered by this special permit. The shipper shall furnish a copy of this special permit 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 special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
  - o All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, Parts 171-180.
  
  - o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
  
  - o Registration required by § 107.601 et seq., when applicable.

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

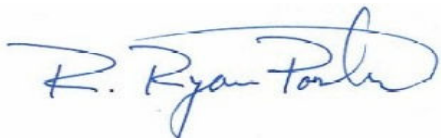
No person may use or apply this special permit, including display of its number, when the special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)- 'The Hazardous Materials Safety and Security Reauthorization Act of 2005' (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term 'exemption' to 'special permit' and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

**June 8, 2006**

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 - Immediate notice of certain hazardous materials incidents, and 171.16 - Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety -- OHMSPA, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for Robert A. McGuire  
Associate Administrator  
for Hazardous Materials Safety

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

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at [http://hazmat.dot.gov/sp\\_app/special\\_permits/spec\\_perm\\_index.htm](http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm) Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: CWF/AM