Fluoryx Labs

Safety Data Sheet

FC13-3700

Ethyl-1,1,2,2-Tetrafluoroethyl Ether

Revised 14-November-2016

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	1,1,2,2-Tetrafluoroethyl ethyl ether
Catalog Number	FC13-3700
Supplier	**Fluoryx Labs** 3650 Research Way, #22 Carson City, NV 89706 USA
Emergency call:	+01-813-248-0585 (International) +1-800-255-3924 (USA)

2. HAZARDS INFORMATION

Emergency Overview

OSHA Hazards Flammable liquid

GHS Classification Flammable liquid (Category 2)

GHS Label elements, including precautionary statements

Pictogram

Signal word: Danger

Hazard statement(s)

H225: Highly flammable liquid and vapor.

Precautionary statement(s)

P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P271: Use only outdoors or in a well-ventilated area.

P285: In case of inadequate ventilation wear respiratory protection.

Potential Health Effects

Inhalation No reported cases of intoxication in humans. Risk of moderate consequences experimentally observed or under certain conditions. May cause respiratory tract irritation.

Skin May cause skin irritation.

Eyes	May cause eye irritation.
Ingestion	May be harmful if swallowed.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Synonyms

HFE-374;
1,1,2,2-Tetrafluoro-1-ethoxyethane;
1,1,2,2-Tetrafluoro-3-oxapentane;
Ethyl 1,1,2,2-tetrafluoroethyl ether;
Ether, ethyl 1,1,2,2-tetrafluoroethyl

Chemical formula

$C_4H_6F_4O$
$HCF_2CF_2OCH_2CH_3$

Components

Material	Molecular Weight	CAS #	EINECS #	TSCA
1,1,2,2-Tetrafluoroethyl ethyl ether	146.09	512-51-6	None	Not listed

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Conditions of flammability

Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media

Carbon dioxide, dry chemical powder, alcohol or polymer foam, Halons.

Special protective equipment for firefighters

Wear self-contained breathing apparatus for fire fighting.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions - carbon oxides, hydrogen fluoride, carbonyl fluoride.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods for cleaning up

Contain spillage, and then collect with an electrically

protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Avoid contact with the substance. Provide appropriate exhaust ventilation at places where dust, mist or vapors are formed. Do not handle in a confined space. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for Safe Storage

Store in dry and cool place. Keep away from heat, sparks and flames. Containers that are opened must be carefully resealed and kept upright to prevent leakage.

Other Precautions:

No open flames or sparks, no smoking. Use electrically grounded equipment. Warn people about the dangers of the product. Prevent electrostatic discharges. Provide electrical equipment safety for hazardous locations.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Contains no substances with published occupational exposure limit values. However, inhalation exposure should be strictly limited.

Personal protective equipment

Respiratory protection

Use only in a chemical fume hood or local exhaust ventilation, and process enclosure if necessary to control exposure. Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Impervious clothing. Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene

and safety practice. Wash hands before breaks and at the end of the workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Form	Liquid, clear
Color	Colorless
Safety Data	
pH	No data available
Melting Point/Freezing Point	-86 °C
Boiling Point	57 °C @ 760 mm Hg
Flash Point	-15 °C, closed cup
Ignition Temperature	No data available
Auto-ignition Temperature	No data available
Lower Explosion Limit	No data available
Upper Explosion Limit	No data available
Thermal Decomposition Temperature	No data available
Vapor Pressure	No data available
Density	1.20 g/mL @ 25 °C
Water Solubility	Negligible
Partition Coefficient (*n*-octanol/water)	No data available
Relative Vapor Density (Air = 1)	No data available
Odor	Ethereal
Odor Threshold	No data available
Evaporation Rate	No data available
Refractive index	1.29 @ 20 °C

10. STABILITY AND REACTIVITY

Storage stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Vapors may form explosive mixture with air.
Conditions to avoid	Heat, flames and sparks. Extremes of temperature and direct sunlight. Keep dry.
Materials to avoid	Oxidizing agents. Strong acids. Metallic powders. Alkaline metals. Metal halides.
Hazardous decomposition products	Hazardous decomposition products formed under fire conditions - carbon oxides, hydrogen fluoride, carbonyl fluoride.

11. TOXICOLOGICAL INFORMATION

Exposure limits	None established
Acute toxicity	Oral: no data available Inhalation: no data available Dermal: no data available
Chronic toxicity	No data available.
Skin corrosion/irritation	No data available.
Serious eye damage/eye irritation	No data available.

Respiratory or skin sensitization	No data available.
Germ cell mutagenicity	No mutagenic effect. Negatives Ames Test.
Carcinogenicity	IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity	No data available
Tetragenicity	No data available
Specific target organ toxicity (Globally Harmonized System)	
Single exposure	No data available
Repeated exposure	No data available
Aspiration Hazard	No data available
Potential Health Effects	
Inhalation	May be harmful if inhaled. May cause respiratory tract irritation. May cause dizziness.
Skin	May cause skin irritation.
Eyes	May cause eyes irritation.
Ingestion	May be harmful if swallowed.
Signs and Symptoms of Exposure	No data available
Synergistic Effects	No data available
Additional Information	No data available

12. ECOLOGICAL INFORMATION

Toxicity	No data available
Persistence and Degradability	No data available
Bioaccumulative Potential	No data available
Mobility in Soil	No data available
PBT and vPvB Assessment	No data available
Air, Photolysis,	ODP = 0. Result: no effect on stratospheric ozone. Reference value for CFC 11: ODP = 1.
Air, Greenhouse Effect	GWP = 47. Reference value for carbon dioxide: GWP = 1.
Other adverse effects	No data available

13. DISPOSAL CONSIDERATIONS

Product	Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer

	surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Contact Fluoryx Inc. to return unused product.
Contaminated packaging	Dispose of as unused product.

14. TRANSPORTATION INFORMATION

DOT (US)

UN1993
Class 3
Proper shipping name: Flammable Liquid, n.o.s. (Ethers)
Packing group II
Marine pollutant: No
Poison inhalation hazard: No

Labeling: 3

IMDG

UN1993
Class 3
Proper shipping name: Flammable Liquid, n.o.s. (Ethers)
Packing group II
EMS-No: F-E, S-D
Marine pollutant: No

Labeling: 3

IATA

UN1993
Class 3
Proper shipping name: Flammable Liquid, n.o.s. (Ethers)
Packing group II

Labeling: 3

15. REGULATORY INFORMATION

OSHA Hazards	Flammable liquid.
TSCA Status	Not listed on US TSCA Inventory. It is for research and development use only.
DSL Status	The substance is not specified on any list.
SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards	Fire hazard. Threshold planning quantity: 10,000 lbs.
Massachusetts Right To Know Components	No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right To Know Components	No components are subject to the Pennsylvania Right to Know Act.
New Jersey Right To Know Components	No components are subject to the New Jersey Right to Know Act.
California Prop. 65 Components	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

HMIS Classification

Health Hazard:	1
Flammability:	3
Physical hazards:	0

NFPA Rating

Health Hazard:	1
Fire:	3
Reactivity Hazard:	0

Legal Disclaimer:

Not for drug, household, or other uses. The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. Unless noted to the contrary, the technical information applies only to pure product.

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End of SDS