



# Material Safety Data Sheet

## FC22-02 Ethyl Difluoroacetate

Revised 15-September-2011

### 1. PRODUCT AND COMPANY IDENTIFICATION

#### Material Identification:

**Product name:** FC22-02  
**Chemical names:** Ethyl Difluoroacetate;  
**Chemical formula:**  $\text{HCF}_2\text{COOCH}_2\text{CH}_3$   
 $\text{C}_4\text{H}_6\text{F}_2\text{O}_2$

#### Company Identification:

**Distributor:** **Fluoryx, Inc.**  
1933 Davis St., Suite 293  
San Leandro, CA 94577  
USA

**Emergency call:** +86-1346-4812437  
+1-510-329-2811

### 2. COMPOSITION AND INFORMATION ON COMPONENTS

Material	Molecular Weight	EINECS #	CAS #
Ethyl Difluoroacetate	124.09	207-223-4	454-31-9

### 3. HAZARDS IDENTIFICATION

#### Emergency Overview

**OSHA Hazards**  
Flammable liquid

**GHS Label elements, including precautionary statements**  
Pictogram



Signal word

Danger

Hazard statement(s)

H226 Flammable liquid and vapour.  
H314 Causes severe skin burns and eye damage.

Precautionary statement(s)

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P310 Immediately call a POISON CENTER or doctor/ physician.

**HMIS Classification**

Health hazard: 0  
 Flammability: 3  
 Physical hazards: 0

**NFPA Rating**

Health hazard: 0  
 Fire: 3  
 Reactivity Hazard: 0

**Potential Health Effects**

**Inhalation** May be harmful if inhaled. May cause respiratory tract irritation.  
**Skin** May be harmful if absorbed through skin. May cause skin irritation.  
**Eyes** May cause eye irritation.  
**Ingestion** May be harmful if swallowed.

**4. FIRST AID MEASURES**

**Potential Effects Of Exposure:**

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

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

**Inhalation:** Remove from exposure area and lie down. If breathing is difficult give oxygen. Never give anything by mouth to an unconscious person. If a person vomits when lying on his back, place him in the side recovery position. When symptoms persist, or in all cases of doubt, seek medical advice. If not breathing, give artificial respiration.

**Eye Contact:** Continue rinsing eyes during transport to hospital. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**Skin Contact:** Remove contaminated clothing. Wash affected area with soap and water. Rinse thoroughly. Seek medical advice.

**5. FIRE FIGHTING MEASURES**

**Flash Point:** 23.9 °C (closed cup). Flammable.

**Firefighting** Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.  
 Specific Hazard(s): Emits toxic fumes under fire

conditions.

**Extinguishing Medium:**

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

**Hazardous Products of Combustion May Include:**

Carbon monoxide, carbon dioxide, hydrogen fluoride (hydrofluoric acid), hydrogen bromide (hydrobromic acid).

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**6. ACCIDENTAL RELEASE MEASURES**

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**Personal Protection:**

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 vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

**Environmental Protection:**

Take precautions to ensure product does not contaminate the ground or enter the drainage system.

**Spill Clean-Up**

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

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**7. HANDLING AND STORAGE**

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**Safe Handling:**

Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

**Storage:**

Store in tightly sealed containers in a cool, well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

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**8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

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**Fire And Explosion Protection:**

Do not spray on a naked flame or any other incandescent material. Store in tightly sealed containers in a cool, well-ventilated place.

**Engineering Controls**

Safety shower and eye bath. Mechanical exhaust required.

**Personal Protective Equipment**

Respiratory:

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK

(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: Compatible chemical-resistant gloves.  
 Eye: Tightly fitting safety goggles. Faceshield (8-inch minimum).  
 Skin and body protection: Choose body protection according to the amount and concentration of the dangerous substance at the work place.

**General Hygiene Measures**

Wash thoroughly after handling. Wash contaminated clothing before reuse.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

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<b>Boiling Point</b>	99.2 °C at 760 mm Hg
<b>Molecular Weight</b>	124.09 g/mole
<b>Form</b>	Clear, colorless liquid
<b>Flash Point</b>	23.9 °C (closed cup)
<b>Melting Point</b>	Not available
<b>Density</b>	1.18 g/mL @ 25 °C
<b>Refractive Index</b>	Not available
<b>Solubility in Water</b>	Not available

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**10. STABILITY AND REACTIVITY**

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<b>Chemical stability</b>	Stable under recommended storage conditions.
<b>Possibility of hazardous reactions</b>	Vapours may form explosive mixture with air.
<b>Conditions to avoid</b>	Heat, flames and sparks.
<b>Materials to avoid</b>	Strong oxidizing agents
<b>Hazardous decomposition products</b>	Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen fluoride

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**11. TOXICOLOGICAL INFORMATION**

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<b>Acute toxicity</b>	no data available
<b>Skin corrosion/irritation</b>	no data available
<b>Serious eye damage/eye irritation</b>	no data available
<b>Respiratory or skin sensitization</b>	no data available
<b>Germ cell mutagenicity</b>	no data available
<b>Carcinogenicity</b>	
<b>IARC:</b>	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.
<b>ACGIH:</b>	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.
<b>NTP:</b>	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.
<b>OSHA:</b>	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.
<b>Reproductive toxicity</b>	no data available
<b>Specific target organ toxicity - single exposure (Globally Harmonized System) -</b>	no data available
<b>Specific target organ toxicity - repeated exposure (Globally Harmonized System) -</b>	no data available
<b>Aspiration hazard</b>	no data available
<b>Potential health effects</b>	
<b>Inhalation</b>	May be harmful if inhaled. May cause respiratory tract irritation.
<b>Ingestion</b>	May be harmful if swallowed.
<b>Skin</b>	May be harmful if absorbed through skin. May cause skin irritation.
<b>Eyes</b>	May cause eye irritation.
<b>Signs and Symptoms of Exposure</b>	Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea

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**12. ECOLOGICAL EFFECT**

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<b>General</b>	Prevent chemicals from entering the ground, water courses, or drainage system.
<b>Toxicity</b>	no data available
<b>Persistence and degradability</b>	no data available
<b>Bioaccumulative potential</b>	no data available
<b>Mobility in soil</b>	no data available
<b>PBT and vPvB assessment</b>	no data available
<b>Other adverse effects</b>	no data available

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**13. DISPOSAL CONSIDERATIONS**

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<b>Disposal:</b>	Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.
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**14. TRANSPORTATION INFORMATION**

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<b>DOT (US)</b>	
UN-Number: 2924	Class: 3 (8), Packing group: III

Proper shipping name:	Flammable liquids, corrosive, n.o.s. (Ethyl difluoroacetate)
Marine pollutant:	No
Poison Inhalation Hazard:	No
<b>IMDG</b>	
UN-Number: 2924	Class: 3 (8), Packing group: III, EMS-No: F-E, S-C
Proper shipping name:	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Ethyl difluoroacetate)
Marine pollutant:	No
<b>IATA</b>	
UN-Number: 2924	Class: 3 (8), Packing group: III
Proper shipping name:	Flammable liquid, corrosive, n.o.s. (Ethyl difluoroacetate)

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**15. REGULATORY INFORMATION EINECS NUMBER: NOT AVAILABLE**

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<b>OSHA Hazards</b>	Flammable liquid
<b>DSL Status</b>	This product contains the following components listed on the Canadian NDSL list. All other components are on the Canadian DSL list.
Ethyl difluoroacetate	CAS-No. 454-31-9
<b>SARA 302 Components</b>	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
<b>SARA 313 Components</b>	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.
<b>SARA 311/312 Hazards</b>	Fire Hazard
<b>Massachusetts Right To Know Components</b>	No components are subject to the Massachusetts Right to Know Act.
<b>Pennsylvania Right To Know Components</b>	
Ethyl difluoroacetate	CAS-No. 454-31-9
<b>New Jersey Right To Know Components</b>	
Ethyl difluoroacetate	CAS-No. 454-31-9
<b>California Prop. 65 Components</b>	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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**16. OTHER INFORMATION**

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<b>Legal Disclaimer:</b>	For R&D use only. 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,
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the technical information applies only to pure product.

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End of MSDS