



# Material Safety Data Sheet

## FC02-04 Perfluorobutyl Ethylene

Revised 12-August-2009

### 1. PRODUCT AND COMPANY IDENTIFICATION

#### Material Identification:

**Product name:** FC02-04  
**Chemical name:** Perfluorobutyl Ethylene;  
*1H,1H,2H-Nonafluorohex-1-ene*  
**Chemical formula:**  $\text{CH}_2=\text{CH}(\text{CF}_2\text{CF}_2)_2\text{F}$   
 $\text{C}_6\text{H}_3\text{F}_9$

#### Company Identification:

**Distributor:** **Fluoryx, Inc.**  
20885 Redwood Rd. #347  
Castro Valley, CA 94546  
USA

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

### 2. COMPOSITION AND INFORMATION ON COMPONENTS

Material	Molecular Weight	Weight %	EINECS #	CAS #
Perfluorobutyl Ethylene	246.07	> 97 %	243-053-7	19430-93-4
4- <i>tert</i> -Butylcatechol (inhibitor)	166.22	100 ppm	202-653-9	98-29-3

### 3. HAZARDS IDENTIFICATION

#### Flammable

Flash point = -17 °C

#### Potential Health Effects:

Eye contact may cause eye irritation with discomfort, tearing or blurring of vision.

Based on related products, inhalation of spray or mist may cause nasal, throat, or lung irritation. Inhalation of large amounts of respirable particles may be toxic to the lungs. Symptoms may be modest initially, followed in hours by severe shortness of breath requiring prompt medical attention.

#### 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.

### 4. FIRST AID MEASURES

#### Potential Exposure:

<b>Inhalation:</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
<b>Eye contact:</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
<b>Skin contact:</b>	Flush skin with water after contact. Wash contaminated clothing before reuse.
<b>Ingestion:</b>	If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician.
<b>Note to Physicians:</b>	Activated charcoal mixture may be administered. To prepare activated charcoal mixture, suspend 50 grams activated charcoal in 400 mL water and mix thoroughly. Administer 5 mL/kg, or 350 mL for an average adult.

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## 5. FIRE FIGHTING MEASURES

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<b>Flammable Properties:</b>	Flash Point: -14 °C. Flammable. Method: closed up Hazardous decomposition products including carbon dioxide, carbon monoxide, and hydrogen fluoride. Toxic gases or particles may be formed during combustion. These products may cause severe eye, nose, throat, and lung irritation or toxic effects.
<b>Extinguishing Media:</b>	Water spray, foam, dry chemical, CO <sub>2</sub> .
<b>Fire Fighting Instructions:</b>	Wear self-contained breathing apparatus. Wear full protective equipment. Avoid breathing decomposition products.

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## 6. ACCIDENTAL RELEASE MEASURES

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<b>Personal Protection:</b>	Wear protective equipment including rubber gloves, and eye protection. Evacuate personnel to safe areas.
<b>Environmental Protection:</b>	Take precautions to ensure product does not contaminate the ground or enter the drainage system.
<b>Spill Clean-Up:</b>	Mix with vermiculite or proprietary absorbent material and transfer to sealed containers for disposal.

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## 7. HANDLING AND STORAGE

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<b>Handling (Personnel):</b>	Avoid contact with eyes. Wash thoroughly after handling.
<b>Storage:</b>	Keep container tightly closed. Keep away from open flames and heated surfaces above 200 °C.

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## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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<b>Engineering Controls:</b>	Keep container tightly closed. Use only with adequate ventilation. Vent heated extruder or
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dryer fumes outside work area. Do not aerosolize. In spray applications, use airless type pressure spray equipment at less than 60 psi, and exhaust ducts, drip pans, or other design features to minimize worker exposure to mists and overspray. Keep away from open flames and heated surfaces above 200 °C.

#### Personal Protective Equipment:

<b>Eye/face protection:</b>	Wear safety glasses or coverall chemical splash goggles.
<b>Respirators:</b>	Wear NIOSH approved respiratory protection as appropriate.
<b>Protective clothing:</b>	Where there is potential for skin contact have available and wear as appropriate, impervious gloves, apron, pants, and jacket.

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### 9. PHYSICAL AND CHEMICAL PROPERTIES

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<b>Boiling Point</b>	59 - 60 °C @ 760 mm Hg
<b>Flash Point</b>	-17 °C (closed cup)
<b>pH</b>	NA
<b>Form</b>	Liquid, clear
<b>Color</b>	Colorless
<b>Specific Gravity</b>	1.452 g/mL @ 25 °C
<b>Refractive Index</b>	1.3 @ 20 °C
<b>% Volatiles</b>	100 weight %
<b>Solubility in Water</b>	Negligible

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### 10. STABILITY AND REACTIVITY

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<b>Chemical Stability:</b>	Stable at normal temperatures and storage conditions.
<b>Incompatibility with Other Materials:</b>	None reasonably foreseeable.
<b>Decomposition:</b>	Hazardous decomposition products including carbon dioxide, carbon monoxide, hydrogen fluoride, toxic gases or particles may be formed during combustion. These products may cause severe eye, nose, throat, and lung irritation or toxic effects.
<b>Polymerization:</b>	Homopolymerization will not occur. Copolymerization can occur in the presence of free radical sources, heat or UV light.

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### 11. TOXICOLOGICAL INFORMATION

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<b>Animal Data:</b>	Inhalation 1 hour ALC: > 7,178 ppm in mice Oral LD50: > 25,000 mg/kg in rats  The product is not a skin irritant, is a mild eye irritant, and is untested for skin sensitization in animals. Repeated exposure to high levels (5 vol %) produced blood changes (decreased platelets and increased monocytes). Tests in animals demonstrate no developmental toxicity. The product does not produce genetic damage in
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bacterial cell cultures but has not been tested in animals. Tests for carcinogenic and reproductive activity have not been performed.

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## 12. DISPOSAL CONSIDERATIONS

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### Waste Disposal:

Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

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## 13. TRANSPORTATION INFORMATION

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### Shipping Information:

Mode	DOT/IMDG/IATA
UN Number	UN1993
Class (Subsidiary)	3
Proper Shipping Name	Flammable Liquid, n.o.s.
Hazard Label (Subsidiary)	Flammable Liquid
Packing Group	II
Shipping Hazard Label:	




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## 14. REGULATORY INFORMATION

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### U.S. Federal Regulations:

TSCA Inventory Status: Reported/Included.  
 TITLE III HAZARD CLASSIFICATIONS  
 SECTIONS 311, 312

Acute	Yes
Chronic	No
Fire	Yes
Reactivity	No
Pressure	No

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## 15. OTHER INFORMATION

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### NFPA, NPCA-HMIS:

NPCA-HMIS Rating  
 Health: 1  
 Flammability: 3  
 Reactivity: 0  
 Personal Protection rating to be supplied by user depending on use conditions.

### Legal Disclaimer:

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, the technical information applies only to pure product.

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