

# MATERIAL SAFETY DATA SHEET

## CARFENTRAZONE-ETHYL TECHNICAL HERBICIDE



MSDS Ref. No.: 128639-02-1

Date Approved: 10/27/2004

Revision No.: 9

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This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the EC directive, 2001/58/EC and other regulatory requirements. The information contained herein is for the concentrate as packaged, unless otherwise noted.

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## 1. PRODUCT AND COMPANY IDENTIFICATION

<b>PRODUCT NAME:</b>	CARFENTRAZONE-ETHYL TECHNICAL HERBICIDE
<b>PRODUCT CODE:</b>	1509
<b>ACTIVE INGREDIENT(S):</b>	Carfentrazone-ethyl
<b>CHEMICAL FAMILY:</b>	Triazolinone
<b>MOLECULAR FORMULA:</b>	$C_{15}H_{14}N_3O_3F_3Cl_2$ (carfentrazone-ethyl)
<b>SYNONYMS:</b>	FMC 116426; F8426; Ethyl 2-chloro-3-[2-chloro-4-fluoro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl]phenyl]-propanoate; IUPAC: 2-chloro-3-[2-chloro-5-(4-difluoromethyl-3-methyl-5-oxo-4,5-dihydro-[1,2,4] triazol-1-yl)-4-fluoro-phenyl] propionic acid ethyl ester, or Ethyl 2-chloro-3-[2-chloro-5-(4-difluoromethyl-3-methyl-5-oxo-4,5-dihydro-[1,2,4] triazol-1-yl)-4-fluoro-phenyl] propionate

### MANUFACTURER

FMC CORPORATION  
Agricultural Products Group  
1735 Market Street  
Philadelphia, PA 19103  
(215) 299 6000 (General Information)

### EMERGENCY TELEPHONE NUMBERS

(800) 424-9300 (CHEMTREC - U.S.A. & Canada)  
(202) 483-7616 (CHEMTREC - All Other Countries)  
(800) 331-3148 (FMC - U.S.A. & Canada)  
(716) 735-3765 (Reverse charges - FMC)

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## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW:

- Very viscous, yellow-orange oil with a very faint, petroleum-like odor.
- Slightly combustible. May support combustion at elevated temperatures.
- Thermal decomposition and burning may form toxic by-products.
- For large exposures or fire, wear personal protective equipment.
- Highly toxic to algae and toxic to fish and aquatic organisms. Keep out of drains and water courses.

**POTENTIAL HEALTH EFFECTS:** Effects from overexposure may result from coming into contact with the eyes. Symptoms of overexposure include shaking, tearing of the eyes, and low body temperature.

**MEDICAL CONDITIONS AGGRAVATED:** None presently known.

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### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt. %	EC No.	EC Class
Carfentrazone-ethyl	128639-02-1	90	None	R50/53; S60-61

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### 4. FIRST AID MEASURES

**EYES:** Flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

**SKIN:** Wash with plenty of soap and water.

**INGESTION:** Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. If any discomfort persists, obtain medical attention.

**INHALATION:** Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

**NOTES TO MEDICAL DOCTOR:** Carfentrazone-ethyl has low oral, dermal and inhalation toxicity. It is minimally irritating to the eyes and non-irritating to the skin. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

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### 5. FIRE FIGHTING MEASURES

**EXTINGUISHING MEDIA:** Foam, CO<sub>2</sub> or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

**FIRE / EXPLOSION HAZARDS:** Slightly combustible. This material may support combustion at elevated temperatures.

**FIRE FIGHTING PROCEDURES:** Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breathe smoke, gases or vapors generated.

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## 6. ACCIDENTAL RELEASE MEASURES

**RELEASE NOTES:** Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8, "Exposure Controls/Personal Protection". Keep unprotected persons and animals out of the area.

Keep material out of lakes, streams, ponds and sewer drains. Dike to confine spill and absorb with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump waste into a drum and label contents for disposal.

To clean and neutralize spill area, tools and equipment, wash with a suitable solution of caustic or soda ash, and an appropriate alcohol (i.e., methanol, ethanol or isopropanol). Follow this by washing with a strong soap and water solution. Absorb, as above, any excess liquid and add to the drums of waste already collected. Repeat if necessary. Dispose of drummed waste according to the method outlined in Section 13, "Disposal Considerations".

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## 7. HANDLING AND STORAGE

**HANDLING AND STORAGE:** Store in a cool, dry, well-ventilated place. Do not use or store near heat, open flame or hot surfaces. Store in original containers only. Keep out of reach of children and animals. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Use local exhaust at all process locations where vapor or mist may be emitted. Ventilate all transport vehicles prior to unloading.

### PERSONAL PROTECTIVE EQUIPMENT

**EYES AND FACE:** For splash, mist or spray exposure, wear chemical protective goggles or a face shield.

**RESPIRATORY:** For splash, mist or spray exposure wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization). Respirator use and selection must be based on airborne concentrations.

**PROTECTIVE CLOTHING:** Depending upon concentrations encountered, wear coveralls or long-sleeved uniform and head covering. For larger exposures as in the case of spills, wear full body cover barrier suit, such as a PVC suit. Leather items - such as shoes, belts and

watchbands - that become contaminated should be removed and destroyed. Launder all work clothing before reuse (separately from household laundry).

**GLOVES:** Wear chemical protective gloves made of materials such as nitrile or neoprene. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

**WORK HYGIENIC PRACTICES:** Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking or using tobacco. Shower at the end of the workday.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>ODOR:</b>	Very faint petroleum-like
<b>APPEARANCE:</b>	Very viscous yellow-orange oil
<b>BOILING POINT:</b>	350 - 355°C @ 760 mmHg
<b>DENSITY / WEIGHT PER VOLUME:</b>	12.14 lb/gal. (1457 g/L)
<b>FLASH POINT:</b>	229 °C (444 °F) (SCC)
<b>MOLECULAR WEIGHT:</b>	412.2 (carfentrazone-ethyl)
<b>PERCENT VOLATILE:</b>	Less than 1%
<b>SPECIFIC GRAVITY:</b>	1.457 @ 20°C (water = 1)
<b>VAPOR PRESSURE:</b>	1.19 x 10 <sup>-7</sup> mmHg @ 25°C

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## 10. STABILITY AND REACTIVITY

<b>CONDITIONS TO AVOID:</b>	Excessive heat and fire.
<b>STABILITY:</b>	Stable
<b>POLYMERIZATION:</b>	Will not occur
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	Carbon monoxide, carbon dioxide, nitrogen oxides, hydrogen chloride, and hydrogen fluoride.

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## 11. TOXICOLOGICAL INFORMATION

**EYE EFFECTS:** Minimally irritating

**SKIN EFFECTS:** Non-irritating

**DERMAL LD<sub>50</sub>:** > 4,000 mg/kg (rat)

**ORAL LD<sub>50</sub>:** 5,143 mg/kg (rat)

**INHALATION LC<sub>50</sub>:** > 5.09 mg/l (4 h) (rat) Maximum attainable concentration - zero mortality

**ACUTE EFFECTS FROM OVEREXPOSURE:** Carfentrazone-ethyl has low oral, dermal and inhalation toxicity. It is minimally irritating to the eyes and non-irritating to the skin. Signs of toxicity in laboratory animals included tremors, abdominal gripping, mucoid anal discharge, bloody oral discharge, hypothermia, squinting eyes, lacrimation, and pink to orange-brown discoloration of urine.

**CHRONIC EFFECTS FROM OVEREXPOSURE:** In studies with laboratory animals, carfentrazone-ethyl did not cause reproductive toxicity, teratogenicity, or carcinogenicity. An overall absence of genotoxicity has been demonstrated in tests of mutagenicity, DNA damage and chromosome aberrations.

**CARCINOGENICITY:**

<b>NTP:</b>	Not listed
<b>IARC:</b>	Not listed
<b>OSHA:</b>	Not listed
<b>OTHER:</b>	(ACGIH) Not listed

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## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL DATA:** Carfentrazone-ethyl is rapidly degraded in soil (DT<sub>50</sub> < 1.5 days) through microbial degradation, initially by hydrolysis to F8426-chloropropionic acid, and then through further side-chain degradation to other acids. Based on field studies, carfentrazone-ethyl and its major metabolite, F8426-chloropropionic acid, are confined to the top soil layer, indicating only slight mobility in soil. Carfentrazone-ethyl is hydrolytically unstable in base (half-life of 5.1 hours), with stability increasing with decreasing pH. It is susceptible to photolytic degradation in water, with a half-life of 8.3 days (pH 5). The Log Pow is 3.36 and the measured bioconcentration factor in whole fish is 159, both indicating a low potential for accumulation. Its vapor pressure is 1.19 x 10<sup>-7</sup> torr, indicating that volatility is not a concern with this chemical.

**ECOTOXICOLOGICAL INFORMATION:** Carfentrazone-ethyl is very toxic to algae (EC<sub>50</sub>: 5.7 to 17 µg/L), and much less toxic to fish (LC<sub>50</sub>: 1.6 to 2.0 mg/L), and aquatic crustacea (LC<sub>50</sub> > 9.8 mg/L). Care should be taken to avoid contamination of the aquatic environment. In a test with earthworms, carfentrazone-ethyl was shown to cause no effects at concentrations up to 820 mg/kg in soil. Carfentrazone-ethyl shows little toxicity to birds either orally (LD<sub>50</sub> > 2,250 mg/kg), or in the diet (LC<sub>50</sub> > 5,620 ppm). Similarly, carfentrazone-ethyl has low toxicity to bees (no death at 200 µg/bee) and, in a study with a 50 WG formulation, revealed a lack of effects to beneficial arthropods (carabid and staphylinid beetles, predatory mite and parasitic wasp) and soil microflora.

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## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHOD:** Open dumping or burning of this material or its packaging is prohibited. If spilled material cannot be disposed of by use according to label instructions, an acceptable method of disposal is to incinerate in accordance with local, state and national environmental laws, rules, standards and regulations. However, because acceptable methods of disposal may vary by location and regulatory requirements may change, the appropriate agencies should be contacted prior to disposal.

**EMPTY CONTAINER:** Non-returnable containers that held this material should be cleaned, prior to disposal, by triple rinsing. Containers which held this material may be cleaned by being triple-rinsed, and recycled, with the rinsate being incinerated. Do not cut or weld metal containers. Vapors that form may create an explosion hazard.

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## 14. TRANSPORT INFORMATION

### U.S. DEPARTMENT OF TRANSPORTATION (DOT)

<b>PACKAGING TYPE:</b>	Non-Bulk
<b>ADDITIONAL INFORMATION:</b>	This material is not a hazardous material as defined by US Department of Transportation at 49 CFR Parts 100 through 185.
<b>PACKAGING TYPE:</b>	Bulk
<b>ADDITIONAL INFORMATION:</b>	This material is not a hazardous material as defined by US Department of Transportation at 49 CFR Parts 100 through 185.

### INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

<b>PACKAGING TYPE:</b>	Non-Bulk
<b>ADDITIONAL INFORMATION:</b>	This material is not a dangerous good as defined by the International Maritime Dangerous Goods Code.

### ADR - EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD

<b>PACKAGING TYPE:</b>	Non-Bulk
<b>PROPER SHIPPING NAME:</b>	Environmentally hazardous substance, liquid, n.o.s.
<b>TECHNICAL NAME(S):</b>	Carfentrazone-ethyl
<b>PRIMARY HAZARD CLASS / DIVISION:</b>	9
<b>CLASSIFICATION CODE:</b>	M6
<b>UN/NA NUMBER:</b>	UN3082
<b>HAZARD IDENTIFICATION NUMBER:</b>	90
<b>MARINE POLLUTANT:</b>	Carfentrazone-ethyl
<b>LABEL(S):</b>	9
<b>PLACARD(S):</b>	9
<b>MARKING(S):</b>	UN3082 + Marine Pollutant

**INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) /  
INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)**

<b>PACKAGING TYPE:</b>	Non-Bulk
<b>ADDITIONAL INFORMATION:</b>	This material is not a dangerous good as defined in ICAO and the International Air Transport Association Dangerous Goods Regulations.

**OTHER INFORMATION:**

HARMONIZED SYSTEM  
Import to the U.S.A.: 2933.99.2200  
Export from the U.S.A.: 2933.99.2350

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## **15. REGULATORY INFORMATION**

### **UNITED STATES**

#### **SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)**

##### **SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A):**

Not listed

##### **SECTION 311 HAZARD CATEGORIES (40 CFR 370):**

Immediate, Delayed

**SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):**

The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.:  
None

**SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):**

There are no ingredients in this product which are subject to Section 313 reporting requirements.

**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)****CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):**

Not listed

**INTERNATIONAL LISTINGS**

Australian Hazard Code: 3XE

**HAZARD, RISK AND SAFETY PHRASE DESCRIPTIONS:**

Carfentrazone-ethyl, (Index #607-309-00-5):

EC Symbols:	N	(Dangerous for the environment)
EC Risk Phrases:	R50/53	(Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.)
EC Safety Phrases:	S60	(This material and its container must be disposed of as hazardous waste)
	S61	(Avoid release to the environment. Refer to special instructions/safety data sheets.)

**COMMENTS:**

FAO / WHO Classification: Not Classified

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**16. OTHER INFORMATION****REVISION SUMMARY:**

This MSDS replaces Revision #8, dated March 21, 2003.

Changes in information are as follows:

New Format, as well as:

Section 3 (Composition / Information on Ingredients)

Section 11 (Toxicological Information)

Section 14 (Transport Information)

Section 15 (Regulatory Information)

Section 16 (Other Information)

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