

MATERIAL SAFETY DATA SHEET

CARFENTRAZONE-ETHYL LIQUID MUP HERBICIDE



MSDS Ref. No.: 128639-02-1-16

Date Approved: 10/27/2004

Revision No.: 2

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.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	CARFENTRAZONE-ETHYL LIQUID MUP HERBICIDE
PRODUCT CODE:	6185
ACTIVE INGREDIENT(S):	Carfentrazone-ethyl
CHEMICAL FAMILY:	Triazolinone
MOLECULAR FORMULA:	$C_{15}H_{14}N_3O_3F_3Cl_2$ (carfentrazone-ethyl)
SYNONYMS:	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)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Transparent, golden colored liquid with an aromatic hydrocarbon odor.
- Moderately combustible. May support combustion if heated above the product's flash point (see Section 9, "Physical and Chemical Properties" below).
- 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 swallowing, breathing or coming into contact with the skin or eyes. Symptoms of overexposure include pinpoint pupils, muscular incoordination, labored breathing, tearing, and diarrhea.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt.%	EC No.	EC Class
Carfentrazone-ethyl	128639-02-1	12 - 22	None	R50/53; S60-61
Aromatic Hydrocarbons	64742-95-6	78 - 88	265-199-0	R10-37-51/53-65-66-67; S23-24-43A-57-60-62
Naphthalene	91-20-3	<12	202-049-5	R22-40-50/53; S2-36/37- 46-60-61

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. Get medical attention if irritation occurs and persists.

INGESTION: Do not induce vomiting and do not give liquids of any kind to the person. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

NOTES TO MEDICAL DOCTOR: This product is expected to have low oral, dermal and inhalation toxicity. It is expected to be irritating to the skin and eyes. This product contains light aromatic hydrocarbons that can produce a severe pneumonitis or fatal pulmonary edema if aspirated during vomiting. Consideration should be given to gastric lavage with an endotracheal tube in place. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Foam, CO₂ or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

FIRE / EXPLOSION HAZARDS: Moderately combustible. When heated above the flash point, this material releases vapors which, when mixed with air, can burn or be explosive.

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.

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Isolate and post spill area. Remove nearby ignition sources (such as smoking, matches or open flames). Wear protective clothing and respiratory protection as prescribed in Section 8, "Exposure Controls/Personal Protection" below. 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".

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

Chemical Name	ACGIH	OSHA	Supplier
Aromatic Hydrocarbons			18 ppm
Naphthalene	10 ppm (TWA) 15 ppm (STEL)	10 ppm (TWA) 50 mg/m ³ (TWA) 15 ppm (STEL)	

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:	Aromatic hydrocarbon
APPEARANCE:	Transparent, golden-color liquid
DENSITY / WEIGHT PER VOLUME:	8.3 lb/gal. (1000 g/L)
FLASH POINT:	94.1 °C (201 °F) (CC)
MOLECULAR WEIGHT:	412.2 (carfentrazone-ethyl)
SOLUBILITY IN WATER:	(< 0.01 @ 77°F)
SPECIFIC GRAVITY:	1.0 @ 20°C (water = 1)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:	Excessive heat and fire.
STABILITY:	Stable
POLYMERIZATION:	Will not occur

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, nitrogen oxides, hydrogen chloride, and hydrogen fluoride.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Expected to be irritating to the eyes.

SKIN EFFECTS: Expected to be irritating to the skin.

DERMAL LD₅₀: carfentrazone-ethyl: > 4,000 mg/kg (rat)

ORAL LD₅₀: carfentrazone-ethyl: 5,143 mg/kg (rat)

INHALATION LC₅₀: carfentrazone-ethyl: > 5.09 mg/l (4 h) (rat) Zero mortality

SENSITIZATION: This product is not expected to produce skin sensitization.

ACUTE EFFECTS FROM OVEREXPOSURE: This product is expected to have low oral, dermal and inhalation toxicity. It is expected to be irritating to the skin and eyes. Signs of toxicity in laboratory animals included mydriasis, cyanosis, ataxia, dyspnea, lacrimation, and diarrhea. Inhalation of aromatic hydrocarbon vapors may cause dizziness, disturbances in vision, drowsiness, respiratory irritation, and eye, skin and mucous membrane irritation. Vomiting after ingestion of this product may cause aspiration of aromatic hydrocarbons into the lungs, which may result in fatal pulmonary edema. Naphthalene, if ingested, may cause red blood cell hemolysis, especially in individuals with glucose-6-phosphate dehydrogenase deficiency.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the formulation. 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. Chronic exposure to aromatic hydrocarbons may cause headaches, dizziness, loss of sensations or feelings (such as numbness), and liver and kidney damage. Naphthalene causes cataracts in humans, rats, rabbits and mice. In 2-year inhalation studies conducted by the National Toxicology Program (NTP), there was no evidence of carcinogenic activity of naphthalene in male mice, there was some evidence of carcinogenic activity in female mice and there was clear evidence of carcinogenic activity in male and female rats. Inhalation studies conducted by the International Agency for Research on Cancer (IARC) have found that there is inadequate evidence of carcinogenicity in humans, therefore, IARC has classified naphthalene as a Group 2B (possibly carcinogenic to humans); however, IARC has found that there is sufficient evidence of carcinogenicity in experimental animals.

CARCINOGENICITY:

Chemical Name	IARC	NTP	OSHA	Other
Naphthalene	Listed	Listed	Not listed	(ACGIH) Not listed

12. ECOLOGICAL INFORMATION

No data available for the formulation. Data presented below are based on the active ingredient.

ENVIRONMENTAL DATA: Carfentrazone-ethyl is rapidly degraded in soil ($DT_{50} < 1.5$ 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 1.19×10^{-7} torr, indicating that volatility is not a concern with this chemical.

ECOTOXICOLOGICAL INFORMATION: Carfentrazone-ethyl is very toxic to algae (EC_{50} : 5.7 to 17 $\mu\text{g/L}$), and much less toxic to fish (LC_{50} : 1.6 to 2.0 mg/L), and aquatic crustacea ($LC_{50} > 9.8$ 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 ($LD_{50} > 2,250$ mg/kg), or in the diet ($LC_{50} > 5,620$ ppm). Similarly, carfentrazone-ethyl has low toxicity to bees (no death at 200 $\mu\text{g/bee}$).

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.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Environmentally hazardous substance, liquid, n.o.s.
TECHNICAL NAME(S):	Naphthalene
PRIMARY HAZARD CLASS / DIVISION:	9
UN/NA NUMBER:	UN 3082
PACKING GROUP:	III

LABEL(S): 9
PLACARD(S): 9
MARKING(S): RQ Environmentally hazardous substance, liquid, n.o.s. (naphthalene), UN3082
REPORTABLE QUANTITY (RQ): Naphthalene
ADDITIONAL INFORMATION: When in packages containing less than 833.3 pounds (100.4 gallons), this material is not a hazardous material as defined by US Department of Transportation at 49 CFR Parts 100 through 185. Naphthalene is in an "RQ" quantity when this material meets or exceeds 833.3 pounds (100.4 gallons) per package.

PACKAGING TYPE: Bulk
PROPER SHIPPING NAME: Environmentally hazardous substance, liquid, n.o.s.
TECHNICAL NAME(S): Naphthalene
PRIMARY HAZARD CLASS / DIVISION: 9
UN/NA NUMBER: UN 3082
PACKING GROUP: III
LABEL(S): 9
PLACARD(S): 9
MARKING(S): 3082
REPORTABLE QUANTITY (RQ): Naphthalene

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

PACKAGING TYPE: Non-Bulk
PROPER SHIPPING NAME: Environmentally hazardous substance, liquid, n.o.s.
TECHNICAL NAME(S): Naphthalene
PRIMARY HAZARD CLASS / DIVISION: 9
UN/NA NUMBER: UN 3082
PACKING GROUP: III
LABEL(S): 9
PLACARD(S): 9
MARKING(S): RQ Environmentally hazardous substance, liquid, n.o.s. (naphthalene), UN3082

REPORTABLE QUANTITY (RQ):	Naphthalene
ADDITIONAL INFORMATION:	When in packages containing less than 833.3 pounds (100.4 gallons), this material is not a dangerous good as defined by the International Maritime Dangerous Goods Code. Naphthalene is in an "RQ" quantity when this material meets or exceeds 833.3 pounds (100.4 gallons) per package.

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

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

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

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Environmentally hazardous substance, liquid, n.o.s.
TECHNICAL NAME(S):	Naphthalene
PRIMARY HAZARD CLASS / DIVISION:	9
UN/NA NUMBER:	UN3082
PACKING GROUP:	III
LABEL(S):	9
LIMITED QUANTITY:	Y914 / 30 kg

LIMITED QUANTITY: PASSENGER / CARGO: 914 / No limit

LIMITED QUANTITY: CARGO: 914 / No limit

ADDITIONAL INFORMATION:

When in packages containing less than 833.3 pounds (100.4 gallons), this material is not a dangerous good as defined in ICAO and the International Air Transport Association Dangerous Goods Regulations. Naphthalene is in an "RQ" quantity when this material meets or exceeds 833.3 pounds (100.4 gallons) per package.

Marks: RQ Environmentally hazardous substance, liquid, n.o.s. (naphthalene), UN3082.

RQ: Naphthalene

OTHER INFORMATION:

HARMONIZED SYSTEM

Import to the U.S.A.: 3808.30.1500

Export from the U.S.A.: 3808.30.0000

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, Fire

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):

This product contains the following ingredients subject to Section 313 reporting requirements:

Naphthalene

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):

Listed

Chemical Name

RQ

Naphthalene

100 lb

FEDERAL INSECTICIDE FUNGICIDE RODENTICIDE ACT

U.S. EPA Signal Word: CAUTION

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.)

Aromatic Hydrocarbons, (Index #649-356-00-4):

EC Symbols:	Xn	(Harmful)
	T	(Toxic)
EC Risk Phrases:	R10	(Flammable)
	R37	(Irritating to respiratory system.)
	R51/53	(Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.)
	R65	(Harmful: may cause lung damage if swallowed.)
	R66	(Repeated exposure may cause skin dryness or cracking.)
	R67	(Vapors may cause drowsiness and dizziness.)
EC Safety Phrases:	S23	(Do not breathe gas, fumes, vapor, or spray)
	S24	(Avoid contact with skin.)
	S43A	(In case of fire use sand, earth, chemical powder or foam.)
	S57	(Use appropriate container to avoid environmental contamination.)
	S60	(This material and its container must be disposed of as hazardous waste)
	S62	(If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.)

Notes For Preparation:

Nota H applies to the product or one or more of its components. Annex 1
 Nota P of Annex 1 applies to the product or one or more of its components.

Naphthalene, (Index #601-052-00-2):

EC Symbols:	Xn	(Harmful)
	N	(Dangerous for the environment)
EC Risk Phrases:	R22	(Harmful if swallowed.)
	R40	(Possible risks of irreversible effects.)
	R50	(Very toxic to aquatic organisms.)
	R53	(May cause long-term adverse effects in the aquatic environment.)
EC Safety Phrases:	S2	(Keep out of the reach of children.)
	S36/37	(Wear suitable protective clothing and gloves.)
	S46	(If swallowed, seek medical advice immediately and show this container or label.)
	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.)

16. OTHER INFORMATION

REVISION SUMMARY:

This MSDS replaces Revision #1, dated September 27, 2002.

Changes in information are as follows:

New Format, as well as:

Section 3 (Composition / Information on Ingredients)

Section 4 (First Aid Measures)

Section 11 (Toxicological Information)

Section 14 (Transport Information)

Section 15 (Regulatory Information)

Section 16 (Other Information)

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