

Material Safety Data Sheet

Display™ Herbicide

SDS #: 6905-A
Revision Date: 2012-04-11
Version 1



This MSDS has been prepared to meet U.S. OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	Display™ Herbicide
Active Ingredient(s)	Carfentrazone-ethyl , Fluthiacet-methyl
Synonyms	FMC 116426; ethyl (RS)-2-chloro-3-[2-chloro-5-(4-difluoromethyl-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl)-4-fluorophenyl] propionate; ethyl α ,2-dichloro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl]-4-fluorobenzenepropanoate ; Acetic acid, [[2-chloro-4-fluoro-5-[(tetrahydro-3-oxo-1H,3H-[1,3,4] thiadiazolo [3,4- α] pyridazin-1-ylidene) amino] phenyl] thio]-, methyl ester
Chemical Family	Triazolinones, Imine chemicals
Recommended use	Herbicide
Manufacturer FMC Corporation Agricultural Products Group 1735 Market Street Philadelphia, PA 19103 General Information: Phone: (215) 299-6000 E-Mail: msdsinfo@fmc.com	Emergency telephone number Medical Emergencies: (800) 331-3148 (U.S.A. & Canada) +1 (651) 632-6793 (All Other Countries - Collect) For leak, fire, spill or accident emergencies, call: +1 800 / 424 9300 (CHEMTREC - U.S.A.) +1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)

2. Hazards identification

Appearance	amber liquid
Physical state	liquid
Odor	Aromatic hydrocarbon
Potential health effects	
Principle Routes of Exposure	Eye contact, Skin contact, Inhalation, Ingestion.
Acute effects	
Eyes	May cause moderate eye irritation.
Skin	May cause moderate skin irritation. May cause sensitization by skin contact.
Inhalation	May cause irritation of respiratory tract. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.
Ingestion	Harmful if swallowed. Potential for aspiration if swallowed. May cause central nervous system depression. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Chronic effects	Prolonged exposure may cause chronic effects. Possible risks of irreversible effects. Repeated or prolonged exposure may cause central nervous system effects. Chronic exposure to aromatic hydrocarbons may cause liver and kidney damage. Naphthalene causes cataracts in humans, rats, rabbits and mice. It has been classified as potential carcinogen based on animal data.

3. Composition/information on ingredients**Hazardous ingredients**

Chemical Name	CAS-No	Weight %
Naphtha (petroleum), heavy aromatic	64742-94-5	50-60
Carfentrazone-ethyl	128639-02-1	18.04
2-Methylnaphthalene	91-57-6	<15
Acetophenone	98-86-2	10-20
Naphthalene	91-20-3	<8
1-Methylnaphthalene	90-12-0	<8
Fluthiacet-methyl	117337-19-6	4.75
ISOBUTYL ALCOHOL	78-83-1	1-5

4. First aid measures

Eye contact	Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.
Skin contact	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Inhalation	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
Ingestion	Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not induce vomiting or give anything by mouth to an unconscious person.
Notes to physician	Treatment is symptomatic and supportive. Contains petroleum distillate. Vomiting may cause aspiration pneumonia.

5. Fire-fighting measures

Flash Point	No information available.
Sensitivity to Mechanical Impact	not applicable
Sensitivity to Static Discharge	not applicable
Suitable extinguishing media	Carbon dioxide (CO ₂), Foam, Dry powder, Water spray.
Protective equipment and precautions for firefighters	Wear self-contained breathing apparatus and protective suit.

NFPA

Health Hazard	1
Flammability	1
Stability	0
Special Hazards	-

6. Accidental release measures

Personal precautions	Isolate and post spill area. Remove all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. For personal protection see section 8.
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Environmental precautions	Keep people and animals away from and upwind of spill/leak. Keep material out of lakes, streams, ponds, and sewer drains.
Methods for containment	Dike to prevent runoff. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
Methods for cleaning up	Clean and neutralize spill area, tools and equipment by washing with bleach water and soap. Absorb rinsate and add to the collected waste. Waste must be classified and labeled prior to recycling or disposal. Dispose of waste as indicated in Section 13.
Other	For further clean-up instructions call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.

7. Handling and storage

Handling	Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.
Storage	Keep in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep out of reach of children and animals. Store in original container only.

8. Exposure controls/personal protection

Exposure guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
2-Methylnaphthalene 91-57-6	S* TWA: 0.5 ppm			
Acetophenone 98-86-2	TWA: 10 ppm			
Naphthalene 91-20-3	S* STEL 15 ppm TWA: 10 ppm	TWA: 10 ppm TWA: 50 mg/m ³	IDLH: 250 ppm TWA: 10 ppm TWA: 50 mg/m ³ STEL: 15 ppm STEL: 75 mg/m ³	Mexico: TWA 10 ppm Mexico: TWA 50 mg/m ³ Mexico: STEL 15 ppm Mexico: STEL 75 mg/m ³
1-Methylnaphthalene 90-12-0	S* TWA: 0.5 ppm			
ISOBUTYL ALCOHOL 78-83-1	TWA: 50 ppm	TWA: 100 ppm TWA: 300 mg/m ³	IDLH: 1600 ppm TWA: 50 ppm TWA: 150 mg/m ³	Mexico: TWA 50 ppm Mexico: TWA 150 mg/m ³ Mexico: STEL 75 ppm Mexico: STEL 225 mg/m ³

Chemical Name	British Columbia	Quebec	Ontario TWAEV	Alberta
2-Methylnaphthalene 91-57-6	TWA: 0.5 ppm Skin		TWA: 0.5 ppm Skin	
Acetophenone 98-86-2	TWA: 10 ppm	TWA: 10 ppm TWA: 49 mg/m ³	TWA: 10 ppm	TWA: 10 ppm TWA: 49 mg/m ³
Naphthalene 91-20-3	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 52 mg/m ³ STEL: 15 ppm STEL: 79 mg/m ³	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 52 mg/m ³ STEL: 15 ppm STEL: 79 mg/m ³ Skin
1-Methylnaphthalene 90-12-0	TWA: 0.5 ppm Skin		TWA: 0.5 ppm Skin	
ISOBUTYL ALCOHOL 78-83-1	TWA: 50 ppm	TWA: 50 ppm TWA: 152 mg/m ³	TWA: 50 ppm	TWA: 50 ppm TWA: 152 mg/m ³

Occupational exposure controls

Engineering measures	Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.
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Personal Protective Equipment

General Information	If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.
Respiratory protection	For dust, splash, mist or spray exposures wear a filtering mask.
Eye/face protection	For dust, splash, mist or spray exposure, wear chemical protective goggles or a face-shield.
Skin and body protection	Wear long-sleeved shirt, long pants, socks, shoes, and gloves.
Hand protection	Protective gloves
Hygiene measures	Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking, chewing gum or using tobacco. Shower or bathe at the end of working. Remove and wash contaminated clothing before re-use. Launder work clothing separately from regular household laundry.

9. Physical and chemical properties

Appearance	amber liquid
Color	amber
Physical state	liquid
Odor	Aromatic hydrocarbon
pH	4.87
Melting Point/Range	No information available.
Freezing point	No information available
Boiling Point/Range	not applicable
Flash Point	No information available.
Evaporation rate	not applicable
Autoignition Temperature	not applicable
Vapor pressure	No information available
Vapor density	No information available
Density	9.0 lb/gal
Specific Gravity	1.08
Water solubility	No information available
Percent volatile	No information available
Partition coefficient:	not applicable
Viscosity	37.1 cSt
Oxidizing properties	not applicable

10. Stability and reactivity

Stability	Stable under recommended storage conditions.
Conditions to avoid	Heat, flames and sparks
Hazardous decomposition products	Carbon oxides, Hydrogen chloride, Hydrogen fluoride, nitrogen oxides (NOx).
Hazardous polymerization	Hazardous polymerization does not occur

11. Toxicological information

Eye contact	Moderately irritating (rabbit)
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Skin contact Moderately irritating (rabbit)
Ingestion Potential for aspiration if swallowed. 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.
Inhalation Inhalation of aromatic hydrocarbon vapors may cause dizziness, disturbances in vision, drowsiness, respiratory irritation, and eye, skin and mucous membrane irritation.
LD50 Dermal > 5000 mg/kg (rat)
LD50 Oral 3129 mg/kg (rat)
LC50 Inhalation: > 2.04 mg/L (rat)
Sensitization Sensitizer

Chronic Toxicity - Other Ingredient(s)

Chronic Toxicity Prolonged exposure may cause chronic effects. Possible risks of irreversible effects. Repeated or prolonged exposure may cause central nervous system effects. Chronic exposure to aromatic hydrocarbons may cause liver and kidney damage. Naphthalene causes cataracts in humans, rats, rabbits and mice. It has been classified as potential carcinogen based on animal data.

Carcinogenicity Carfentrazone-ethyl: Did not show carcinogenic effects in animal experiments. Fluthiacet-methyl caused increases in benign tumors of pancreas in male rats at highest dose, along with pancreatic and liver toxicity. Increase in liver tumors at two highest doses in male mouse, along with hepatotoxicity, that could both be secondary to porphyria. There was no evidence of carcinogenic activity of naphthalene in male mice, but there was some evidence of carcinogenic activity in female mice and clear evidence of carcinogenic activity in male and female rats in 2-year inhalation studies conducted by the National Toxicology Program (NTP).

Mutagenicity Carfentrazone-ethyl: Not genotoxic. Fluthiacet-methyl was positive in in-vitro chromosomal aberation tests and negative in in-vivo tests of mutagenicity, chromosomal aberrations, clastogenicity, DNA damage and dominant lethality.

Reproductive toxicity Carfentrazone-ethyl: No toxicity to reproduction. Fluthiacet-methyl: Reproductive toxicity was observed in the rat only at doses well in excess of those causing systemic toxicity in parents.

Neurological Effects Fluthiacet-methyl: Not neurotoxic.

Developmental Toxicity Carfentrazone-ethyl: Not teratogenic in animal studies. Fluthiacet-methyl: A slight delay in fetal development in the rat, with no effects in the rabbit.

Target Organ Effects Carfentrazone-ethyl: Chronic and subchronic toxicity tests have shown effects on the liver, bone marrow, spleen, pancreas, lymphatic system, hematopoietc system, uterus and blood at high doses. High doses of fluthiacet-methyl have been shown to increase the incidence of liver tumors in male mice and pancreatic tumors in male rats. Red blood cell reduction can occur due to hemoglobin biosynthesis inhibition. Accumulation of precursors of hemoglobin may lead to secondary toxicity to liver and other organs.

Chronic Toxicity - Other Ingredient(s) Chronic exposure to aromatic hydrocarbons may cause headaches, dizziness, loss of sensations or feelings (such as numbness), and liver and kidney damage.

Chemical Name	ACGIH	IARC	NTP	OSHA	NIOSH - Target Organs
Naphthalene		2B	Reasonably Anticipated	X	eyes,blood,liver,kidneys,skin,CNS
ISOBUTYL ALCOHOL					eyes,CNS,respiratory system,skin

Legend:

IARC: (International Agency for Research on Cancer)
 Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

OSHA: (Occupational Safety & Health Administration)

X - Present

12. Ecological information

Ecotoxicity

Carfentrazone-ethyl (128639-02-1)

Active Ingredient(s)	Duration	Species	Value	Units
Carfentrazone-ethyl	120 h LC50	Algae	5.7 - 17	µg/L
	96 h LC50	Fish	1.6 - 2.0	mg/L
	48 h LC50	Daphnia	>9.8	mg/L
	LD50 Oral	Bobwhite quail	>2250	mg/kg

Fluthiacet-methyl (117337-19-6)

Active Ingredient(s)	Duration	Species	Value	Units
Fluthiacet-methyl	72 h LC50	Algae	0.00251	mg/L
	48 h LC50	Daphnia magna	>2.3	mg/L
	LC50	Bluegill sunfish	0.14	mg/L
	LC50	Rainbow trout	0.43	mg/L
	LD50 Oral	Bobwhite quail	>2250	mg/kg
	LD50 Oral	Mallard duck	>2250	mg/kg

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia and other aquatic invertebrates
Naphtha (petroleum), heavy aromatic	2.5 mg/L EC50 72 h (Skeletonema costatum)	LC50 19 mg/L Pimephales promelas 96 h LC50 2.34 mg/L Oncorhynchus mykiss 96 h LC50 1740 mg/L Lepomis macrochirus 96 h LC50 45 mg/L Pimephales promelas 96 h LC50 41 mg/L Pimephales promelas 96 h		EC50 0.95 mg/L 48 h
Acetophenone		LC50 162 mg/L Pimephales promelas 96 h LC50 155 mg/L Pimephales promelas 96 h		
Naphthalene	0.4 mg/L EC50 72 h (Skeletonema costatum)	LC50 5.74-6.44 mg/L Pimephales promelas 96 h LC50 1.6 mg/L Oncorhynchus mykiss 96 h LC50 0.91-2.82 mg/L Oncorhynchus mykiss 96 h LC50 1.99 mg/L Pimephales promelas 96 h LC50 31.0265 mg/L Lepomis macrochirus 96 h		LC50 2.16 mg/L 48 h EC50 1.96 mg/L 48 h EC50 1.09 - 3.4 mg/L 48 h
ISOBUTYL ALCOHOL	230 mg/L EC50 48 h (Desmodesmus subspicatus)	LC50 1370-1670 mg/L Pimephales promelas 96 h LC50 375 mg/L Pimephales promelas 96 h LC50 1480-1730 mg/L Lepomis macrochirus 96 h LC50 1120-1520 mg/L Oncorhynchus mykiss 96 h		EC50 1300 mg/L 48 h EC50 1070 - 1933 mg/L 48 h

Environmental Fate

Carfentrazone-ethyl (128639-02-1)

Active Ingredient(s)	Type of Test	Result
Carfentrazone-ethyl	Bioconcentration factor (BCF), Rainbow trout	159
	Half-life in soil	<1.5 days
	log Pow	3.3
	Mobility in soil	Not expected to reach groundwater
	Stability in water	Hydrolysis unstable at pH 5 to 9.

Fluthiacet-methyl (117337-19-6)

Active Ingredient(s)	Type of Test	Result
Fluthiacet-methyl	Bioconcentration factor (BCF), Bluefill sunfish (Lepomis macrochirus)	240
	log Pow	4.1
	Mobility in soil	Not expected to reach groundwater
	Soil degradation	<2 days
	Stability in water	Hydrolysis half-life of 18 days (pH 7); Stable at pH 5 and unstable at pH 9.

Chemical Name	log Pow
Naphtha (petroleum), heavy aromatic	2.9 - 6.1
2-Methylnaphthalene	3.86
Acetophenone	1.58 - 1.73
Naphthalene	3.3
ISOBUTYL ALCOHOL	0.79

13. Disposal considerations

Waste disposal methods

Improper disposal of excess pesticide, spray mixture, or rinsate is prohibited. If these wastes cannot be disposed of by use according to label instructions, contact appropriate disposal authorities for guidance.

Contaminated packaging

Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions.

14. Transport information

DOT

Not regulated for transportation if shipped in Non Bulk packaging. The classification below pertains to the shipment in Bulk packaging.

Packaging Type

Bulk

Proper shipping name

Other regulated substances, liquid, n.o.s.

Hazard Class

9

UN/ID No

NA3082

Packing group

III

Reportable Quantity (RQ)

Naphthalene

Description

NA3082, Other regulated substances, liquid, n.o.s. (naphthalene), 9, PGIII, RQ

Additional information

Naphthalene is an "RQ" quantity when this material meets or exceeds 1428 pounds (171 gallons) per package. Classification is not applicable when shipped at quantities less than the calculated RQ.

TDG

Classification below is only applicable when shipped by vessel and is not applicable when shipped by road or rail only.

Proper shipping name

Environmentally hazardous substance, liquid, n.o.s.

Hazard Class

9

UN/ID No

UN3082

Packing group

III

Marine pollutant

Carfentrazone-ethyl, Fluthiacet-methyl.

Description UN3082, Environmentally hazardous substance, liquid, N.O.S. (Carfentrazone-ethyl, Fluthiacet-methyl), 9, PG III, Marine Pollutant

ICAO/IATA

UN/ID No UN3082
Proper shipping name Environmentally hazardous substance, liquid, n.o.s.
Hazard Class 9
Packing group III
Marine pollutant Carfentrazone-ethyl, Fluthiacet-methyl
Description UN3082, Environmentally hazardous substance, liquid, N.O.S. (Carfentrazone-ethyl, Fluthiacet-methyl), 9, PG III, Marine Pollutant

IMDG/IMO

Proper shipping name Environmentally hazardous substance, liquid, n.o.s.
Hazard Class 9
UN/ID No UN3082
Packing group III
EmS No. F-A, S-F
Marine pollutant Carfentrazone-ethyl, Fluthiacet-methyl
Description UN3082, Environmentally hazardous substance, liquid, N.O.S. (Carfentrazone-ethyl, Fluthiacet-methyl), 9, PG III, Marine Pollutant

15. Regulatory information

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Acetophenone	98-86-2	10-20	1.0
Naphthalene	91-20-3	<8	0.1

SARA 311/312 Hazard Categories

Acute Health Hazard yes
Chronic Health Hazard yes
Fire Hazard no
Sudden Release of Pressure Hazard no
Reactive Hazard no

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Acetophenone	5000 lb	
Naphthalene	100 lb	
ISOBUTYL ALCOHOL	5000 lb	

Chemical Name	U.S. - TSCA (Toxic Substances Control Act) - Section 4 - Chemical Test Rules (40 CFR 799)	U.S. - TSCA (Toxic Substances Control Act) - Section 5(a)(2) - Chemicals with Significant New Use Rules (SNURs)
Naphthalene	40 CFR 799.5115	
ISOBUTYL ALCOHOL	40 CFR 799.5000	

Chemical Name	U.S. - TSCA (Toxic Substances Control Act) - Section 8(a) - Chemical-Specific Reporting and Recordkeeping
Naphtha (petroleum), heavy aromatic	Partially exempt chemical substance termed Petroleum Process Stream
Naphthalene	PAIR: 08/04/1995

Chemical Name	U.S. - TSCA (Toxic Substances Control Act) - Section 8(d) - 716.120(a) - Health and Safety Reporting - List of Substances
Naphthalene	06/01/1987
ISOBUTYL ALCOHOL	03/07/1986

International Regulations

Mexico - Grade

Moderate risk, Grade 2

Chemical Name	Carcinogen Status	Mexico
Naphthalene		Mexico: TWA 10 ppm Mexico: TWA 50 mg/m ³ Mexico: STEL 15 ppm Mexico: STEL 75 mg/m ³
ISOBUTYL ALCOHOL		Mexico: TWA 50 ppm Mexico: TWA 150 mg/m ³ Mexico: STEL 75 ppm Mexico: STEL 225 mg/m ³

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class

D2A Very toxic materials, D2B Toxic materials



16. Other information

Revision Date: 2012-04-11
Reason for revision: Initial Release.

Disclaimer

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End of Material Safety Data Sheet