Material Safety Data Sheet

CADET™ HERBCICIDE

SDS # : 6504-A
Revision Date: 2013-03-22
Version 1.03

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 CADET™ HERBCICIDE

Formula code 6504-A

Active Ingredient(s) Fluthiacet-methyl

Alternate Commercial Name Appeal® EC, Fluthiacet-methyl 10 EC

Synonyms IUPAC name: methyl [2-chloro-4-fluoro-5-(5,6,7,8-tetrahydro-3-oxo-1H,3H-[1,3,4]thiadiazolo[3,4-a]pyridazin-1-ylideneamino)phenylthio]acetate; CAS name: methyl [[2-chloro-4-fluoro-5-[(tetrahydro-3-oxo-1H,3H-[1,3,4]thiadiazolo[3,4-a]pyridazin-1-ylidene)amino]phenyl]thio]acetate

Manufacturer
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General Information:
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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 Golden liquid

Physical state Liquid

Odor Almond

Physical or Chemical Hazards .

Flammable properties Combustible liquid

Potential health effects

Acute effects

Eyes May cause moderate eye irritation.

Skin Substance may cause slight skin irritation.

Inhalation Inhalation of vapors in high concentration may cause irritation of respiratory system. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause central nervous system depression. Potential for aspiration if swallowed.

Chronic effects Effects are expected to be similar to those that are seen with acute toxicity. Chronic exposure to aromatic hydrocarbons may cause headaches, dizziness, loss of sensations or feelings (such as numbness), and liver and kidney damage.

Most Important Symptoms/Effects Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Environmental hazard Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Composition/information on ingredients

Hazardous ingredients

Chemical Name	CAS-No	Weight %
Acetophenone	98-86-2	40-50
Methyl pyrrolidone	872-50-4	20-30
Naphtha (petroleum), heavy aromatic	64742-94-5	10-20
Fluthiacet-methyl	117337-19-6	10.3

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.

5. Fire-fighting measures

Flammable properties Combustible liquid

Flash Point 87.22 °C / 189 °F (estimated)
Sensitivity to Mechanical Impact not applicable
Sensitivity to Static Discharge not applicable

Suitable extinguishing media Foam. Carbon dioxide (CO_2). Dry chemical. Water spray or fog.

Protective equipment and precautions for firefighters As in any fire, wear self-contained breathing apparatus and full protective gear. Isolate fire area. Evaluate downwind.

NFPA

Health Hazard	1
Flammability	2
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.

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
Acetophenone 98-86-2	TWA: 10 ppm			
Chemical Name	**British Columbia**	**Quebec**	**Ontario TWAEV**	**Alberta**
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
Methyl pyrrolidone 872-50-4			TWA: 400 mg/m^3	

Occupational exposure controls

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

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

9.1 Information on basic physical and chemical properties

Appearance Golden liquid
Color gold

Physical state	Liquid
Odor	Almond
pH	6 - 8 (1% solution)
Melting Point/Range	not applicable
Freezing point	No information available.
Boiling Point/Range	No information available.
Flash Point	87.22 °C / 189 °F (estimated)
Evaporation rate	not applicable
Flammable properties	Combustible liquid
Vapor pressure	No information available.
Vapor density	No information available.
Density	1.06 g/cm³
Water solubility	No information available
Percent volatile	No information available.
Partition coefficient:	not applicable
Viscosity	No information available.

9.2 Other information

10. Stability and reactivity

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

11. Toxicological information

Eye contact	Moderately irritating to skin rabbit. Data presented is for a similar formulation.
Skin contact	Substance may cause slight skin irritation (rabbit). Data presented is for a similar formulation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause central nervous system depression. 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.
Inhalation	Inhalation of hydrocarbon vapors may cause headaches, dizziness, disturbances in vision, drowsiness, respiratory irritation, anesthesia, unconsciousness, and other central nervous system effects.
LD50 Dermal	Similar formulation:: > 2,020 mg/kg (rabbit)
LD50 Oral	Similar formulation:: 2,537 mg/kg (rat)
LC50 Inhalation:	Similar formulation: > 2.73 mg/L 4 hr (rat)
Sensitization	Based on a similar formulation, this product is not expected to produce skin sensitization.

Chronic Toxicity - Other Ingredient(s)

Chronic Toxicity	Effects are expected to be similar to those that are seen with acute toxicity. Chronic exposure to aromatic hydrocarbons may cause headaches, dizziness, loss of sensations or feelings (such as numbness), and liver and kidney damage.
Carcinogenicity	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. Not recognized as carcinogenic by Research Agencies (IARC, NTP, OSHA, ACGIH).

Mutagenicity 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 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 Fluthiacet-methyl: A slight delay in fetal development in the rat, with no effects in the rabbit. Animals studies indicate that NMP may be embryotoxic by the oral and intraperitoneal routes. At maternally toxic doses, teratogenic effects were seen in animal tests involving oral, intraperitoneal and dermal exposures. Effects were not seen at levels tolerated by the mother.

Target Organ Effects 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.

12. Ecological information

Ecotoxicity

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
Acetophenone		LC50 162 mg/L Pimephales promelas 96 h LC50 155 mg/L Pimephales promelas 96 h		
Methyl pyrrolidone	500 mg/L EC50 72 h (Desmodesmus subspicatus)	LC50 832 mg/L Lepomis macrochirus 96 h LC50 4000 mg/L Leuciscus idus 96 h LC50 1072 mg/L Pimephales promelas 96 h LC50 1400 mg/L Poecilia reticulata 96 h		EC50 4897 mg/L 48 h
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
dodecylbenzene sulfonic acid	29 mg/L EC50 96 h (Pseudokirchneriella subcapitata)	LC50 10.8 mg/L Oncorhynchus mykiss 96 h LC50 3.5 - 10 mg/L Brachydanio rerio 96 h		EC50 5.88 mg/L 48 h

Environmental Fate

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**
Acetophenone	1.58 - 1.73
Methyl pyrrolidone	-0.46
Naphtha (petroleum), heavy aromatic	2.9 - 6.1

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
- **UN/ID No** NA1993
- **Hazard Class** Combustible
- **Packing group** III
- **Reportable Quantity (RQ)** Naphthalene - 100 lbs. / 45.4 kg

TDG

- **UN/ID No** UN3082
- **Hazard Class** 9
- **Packing group** III

ICAO/IATA

- **UN/ID No** UN3082
- **Hazard Class** 9
- **Packing group** III
- **Marine pollutant** Fluthiacet-methyl
- **Limited quantity** 914 / 450 L

IMDG/IMO

- **UN/ID No** UN3082
- **Hazard Class** 9
- **Packing group** III
- **Marine pollutant** Fluthiacet-methyl

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	42	1.0
Methyl pyrrolidone	872-50-4	28	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	yes
Chronic Health Hazard	yes
Fire Hazard	yes
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	

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)
Methyl pyrrolidone	40 CFR 799.5000	

International Regulations

Mexico - Grade No information available.

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 B3 Combustible liquid
D2A Very toxic materials

16. Other information

Revision Date: 2013-03-22
Reason for revision: (M)SDS sections updated.

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End of Material Safety Data Sheet