

MATERIAL SAFETY DATA SHEET

ECHELON™ 4 SC HERBICIDE



MSDS Ref. No.: F18-50-4
Date Approved: 10/26/2007
Revision No.: 3

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:	ECHELON™ 4 SC HERBICIDE
PRODUCT CODE:	6330
ACTIVE INGREDIENT(S):	Sulfentrazone*; Prodiamine**
CHEMICAL FAMILY:	Aryl Triazolinones*; Dinitro aniline**
MOLECULAR FORMULA:	C ₁₁ H ₁₀ Cl ₂ F ₂ N ₄ O ₃ S (sulfentrazone); C ₁₃ H ₁₇ F ₃ N ₄ O ₄ (prodiamine)
SYNONYMS:	FMC 97285; F6285; CAS: N-[2,4-dichloro-5-[4-difluoromethyl]-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl]phenyl]methanesulfonamide; IUPAC: N-[2,4-dichloro-5-(4-difluoromethyl-3-methyl-5-oxo-4,5-dihydro-[1,2,4]triazol-1-yl)phenyl]methane sulfonamide*; CAS: 2,4-dinitro-N ³ ,N ³ -dipropyl-6-(trifluoromethyl)-1,3-benzenediamine; IUPAC: 5-dipropylamino-a-a-a-trifluoro-4,6-dinitro-o-toluidine; 2,6-dinitro-N ¹ ,N ¹ -dipropyl-4-trifluoromethyl-m-phenylenediamine**

Information for Sulfentrazone*; Information for Prodiamine**

MANUFACTURER

FMC CORPORATION
Agricultural Products Group
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Philadelphia, PA 19103
(215) 299 6000 (General Information)
msdsinfo@fmc.com (Email - General Information)

EMERGENCY TELEPHONE NUMBERS

(800) 331-3148 (Medical - U.S.A. & Canada)
(651) 632-6793 (Medical - Collect - All Other Countries)

For leak, fire, spill, or accident emergencies, call:
(800) 424-9300 (CHEMTREC - U.S.A. & Canada)
(703) 527-3887 (CHEMTREC - Collect - All Other Countries)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Bright yellow liquid with a mild phenolic odor.
- Slightly combustible. May support combustion at elevated temperatures. Finely dispersed particles can form explosive mixtures in air.
- Thermal decomposition and burning may form toxic by-products.
- For large exposures or fire, wear personal protective equipment.
- Slightly toxic to fish and aquatic organisms. Keep out of drains and water courses.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from swallowing or inhaling this product. Symptoms of overexposure include tremors, decreased activity, labored breathing, decreased locomotion, tearing, and nasal discharge.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt.%	EC No.	EC Class
Sulfentrazone	122836-35-5	13.64	None	Not classified
Prodiamine	29091-21-2	27.28	249-421-3	Not classified
Glycerin	56-81-5	6	200-289-5	Not classified
Surfactant Blend		<3	None	Not classified
Polysorbate 80	9005-65-6	<2.3	None	Not classified
Toluene	108-88-3	<1	203-625-9	R11-38-48/20-63-65-67; S2-36/37-46-62

4. FIRST AID MEASURES

EYES: Flush with plenty of water. Get medical attention if irritation occurs and persists.

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, contact a medical doctor.

NOTES TO MEDICAL DOCTOR: This product has low oral, dermal and inhalation toxicity. It is mildly irritating to the eyes and slightly irritating to the skin. It is non-sensitizing to the skin. Contains toluene which can produce a severe pneumonitis 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: Slightly combustible. May support combustion at elevated temperatures. Finely dispersed particles can form explosive mixtures in air.

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. 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. Large spills should be covered to prevent dispersal. For dry material, use a wet sweeping compound or water to prevent the formation of dust. If water is used, prevent runoff or dispersion of excess liquid by diking and absorbing with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump all waste material, including absorbent, 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
Glycerin	10 mg/m ³	15 mg/m ³ (total dust)	
Toluene	50 ppm (TWA) (skin)	200 ppm (PEL) 300 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, spray or mist exposure wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator with organic vapor cartridges (approved by 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 butyl rubber, 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, chewing gum, or using tobacco. Shower at the end of the workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:	Mildly phenolic
APPEARANCE:	Bright yellow liquid
DENSITY / WEIGHT PER VOLUME:	9.95 lbs/gal (1192 g/L)

FLASH POINT:	> 100 °C (> 212 °F)
MOLECULAR WEIGHT:	387.19 (sulfentrazone) 350.3 (prodiamine)
pH:	6.35 (1% in water)
SOLUBILITY IN WATER:	Disperses
SPECIFIC GRAVITY:	1.192 g/mL

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, sulfur oxides, hydrogen chloride, hydrogen fluoride.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Mildly irritating (rabbit)

SKIN EFFECTS: Slightly irritating (rabbit)

DERMAL LD₅₀: > 5,000 mg/kg (rat)

ORAL LD₅₀: > 5,000 mg/kg (rat)

INHALATION LC₅₀: > 2.19 mg/l (4 h) (rat)

SENSITIZATION: Non-sensitizing (guinea pig)

ACUTE EFFECTS FROM OVEREXPOSURE: This product has low oral, dermal and inhalation toxicity. It is mildly irritating to the eyes and slightly irritating to the skin.

Signs of toxicity in laboratory animals included intermittent tremors, decreased activity, prostration, shallow breathing, ocular discharge, salivation and decreased food consumption.

Polysorbate 80 mists or sprays may cause irritation of the respiratory tract.

Effects observed in laboratory animals after acute inhalation of toluene included mucous membrane irritation, motor incoordination, prostration, changes in respiratory rate, changes in serum and blood enzyme activities, elevated blood glucose and packed cell volume, decreased body weight and death. Vomiting after ingestion of this product may cause aspiration of toluene into the lungs, which may result in fatal pulmonary edema.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the formulation. Sulfentrazone was not carcinogenic in lifetime feeding studies with laboratory animals, nor was it found to be mutagenic in a battery of tests. In a reproduction study, sulfentrazone produced adverse effects on the growth and survival of the offspring, decreased male fertility and oligospermia at 25 mg/kg/day, and 35 mg/kg/day. Sulfentrazone was found to be fetotoxic in oral and dermal developmental toxicity studies; the fetal NOELS were 10 mg/kg/day and 100 mg/kg/day, respectively. At labeled use rates and practices of mixing and applying, expected exposure to farm workers is at least one hundred times lower than the doses that produced effects in laboratory animals.

Prodiamine was non-mutagenic in both bacterial and mammalian cells. In long-term feeding studies with prodiamine, the NOEL was 200 ppm in rats, and 500 ppm in mice. Toxicity was identified in the liver and thyroid of rats at 3200 ppm, where decreased body-weight gains, liver enlargement and alterations, and species specific benign thyroid tumors were seen. At 5000 ppm in mice, both decreased body weight gains and increased liver weights were reported, but no compound related tumors were observed. Prodiamine did not cause reproductive or developmental toxicity at 100 mg/kg/day. In a 2-generations study, the NOEL for adults and weanling rats was 200 ppm. Potential toxicity was evident in all adult animals in both generations at 2000 ppm as decreased body weight gains and increased liver weights. Pups showed similar findings. In a thyroid hormone mechanism assay, rats demonstrated liver enzyme induction and increased UDGPT activities accompanied by thyroid hormone imbalances.

Under the conditions of 2-year feeding studies conducted by the National Toxicology Program (NTP) there was equivocal evidence of carcinogenic activity for polysorbate 80 in male rats based on an increased incidence of pheochromocytomas of the adrenal medulla. There was no evidence of carcinogenic activity in female rats, or in male or female mice given 25,000 or 50,000 ppm. Administration of Polysorbate 80 was associated with inflammation and squamous hyperplasia of the forestomach in male and female mice, and with ulcers of the forestomach in female mice. (NTP Technical Report # 415, January 1992). Polysorbate 80 showed no adverse reproductive effects when rats and rabbits were intravenously given up to 75 and 62.5 mg/kg daily during organogenesis.

Chronic exposure to toluene may cause headaches, dizziness, loss of sensations or feelings (such as numbness), and liver and kidney damage. Inhalation of toluene vapors at high doses have also resulted in an increased incidence of malformations and decreased fetal weight in laboratory animals.

CARCINOGENICITY:

Chemical Name	IARC	NTP	OSHA	Other
Polysorbate 80	Not listed	Not listed	Not listed	(ACGIH) Not listed

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: No data available for the formulation.

Sulfentrazone is stable in soil (half-life = 18 months). In water, sulfentrazone is stable to hydrolysis over the pH range of 5 to 9, however, it will readily undergo photolysis (half-life < 0.5 day). Sulfentrazone has a low affinity for organic matter (Koc = 43), but is mobile only in soils with high sand content. The potential for sulfentrazone to bioaccumulate is very low, having a Log Pow of 1.48, and a bioconcentration factor of 1.1 - 2.0.

Prodiamine is stable to hydrolysis. It will undergo photolysis, and in aqueous solution, has a reported a half-life of less than 1 hour. It has a reported half-life in soil of less than 57 days, and will disperse in water.

ECOTOXICOLOGICAL INFORMATION: No data available for the formulation.

Sulfentrazone is slightly toxic to fish and aquatic arthropods, with LC_{50} values ranging from 60.4 mg/L to > 130 mg/L. Sulfentrazone has a very low order of toxicity to waterfowl (dietary LC_{50} > 5620 ppm) and upland game birds (oral LD_{50} > 2,250 mg/kg). Prodiamine is expected to be highly toxic to fish (LC_{50} > 552 ppb), and aquatic invertebrates (LC_{50} > 658 ppb).

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
ADDITIONAL INFORMATION:	This material is not a hazardous material as defined by US Department of Transportation at 49 CFR Parts 100 through 185.
PACKAGING TYPE:	Bulk
PROPER SHIPPING NAME:	Environmentally hazardous substance, liquid, n.o.s.
TECHNICAL NAME(S):	Prodiamine
PRIMARY HAZARD CLASS / DIVISION:	9
UN/NA NUMBER:	UN 3082
PACKING GROUP:	III

MARINE POLLUTANT:	Prodiamine
LABEL(S):	9
PLACARD(S):	9
MARKING(S):	3082

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Environmentally hazardous substance, liquid, n.o.s.
TECHNICAL NAME(S):	Prodiamine
PRIMARY HAZARD CLASS / DIVISION:	9
UN/NA NUMBER:	UN 3082
PACKING GROUP:	III
MARINE POLLUTANT:	Prodiamine
LABEL(S):	9
PLACARD(S):	9
MARKING(S):	Environmentally hazardous substance, liquid, n.o.s. (prodiamine), UN 3082 + Marine Pollutant
ADDITIONAL INFORMATION:	EmS Number: F-A, S-F

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):	Prodiamine
PRIMARY HAZARD CLASS / DIVISION:	9
CLASSIFICATION CODE:	M6
UN/NA NUMBER:	UN3082
PACKING GROUP:	III
HAZARD IDENTIFICATION NUMBER:	90
MARINE POLLUTANT:	Prodiamine
LABEL(S):	9
PLACARD(S):	9

MARKING(S):

3082, 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):	Prodiamine
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 / 450 L
LIMITED QUANTITY: CARGO:	914 / 450 L
ADDITIONAL INFORMATION:	Marks: Environmentally hazardous substance, liquid, n.o.s. (prodiamine), UN 3082 + Marine Pollutant

OTHER INFORMATION:

HARMONIZED SYSTEM

Import to the U.S.A.: 3808.93.1500

Export from the U.S.A.: 3808.93.0000

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

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 does not, to our knowledge, contain any toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.

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

As noted below:

<u>Chemical Name</u>	<u>RQ</u>
Toluene	1,000 lb

INTERNATIONAL LISTINGS

Australian Hazard Code: 3Z

HAZARD, RISK AND SAFETY PHRASE DESCRIPTIONS:

Toluene, (Index #601-021-00-3):

EC Symbols:	F	(Highly Flammable)
	Xn	(Harmful)
	Xi	(Irritant)
EC Risk Phrases:	R11	(Highly flammable)
	R38	(Irritating to skin)
	R48/20	(Harmful: danger of serious damage to health by prolonged exposure through inhalation)
	R63	(Possible risk of harm to the unborn child)
	R65	(Harmful: may cause lung damage if swallowed.)
EC Safety Phrases:	R67	(Vapors may cause drowsiness and dizziness.)
	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.)
	S62	(If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.)

16. OTHER INFORMATION

NFPA

Health	1
Flammability	1
Reactivity	0
Special	None

No special requirements

NFPA = National Fire Protection Association

Degree of Hazard Code:

4 = Extreme

3 = High

2 = Moderate

1 = Slight

0 = Insignificant

REVISION SUMMARY:

This MSDS replaces Revision #2, dated December 6, 2006.

Changes in information are as follows:

Section 1 (Product and Company Identification)

Section 11 (Toxicological Information)

Section 14 (Transport Information)

Section 15 (Regulatory Information)

Section 16 (Other Information)

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