MATERIAL SAFETY DATA SHEET

ECHELON™ 0.3% GRANULAR HERBICIDE on FERTILIZER

MSDS Ref. No.: F18-52-6
Date Approved: 12/08/2006
Revision No.: 1

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™ 0.3% GRANULAR HERBICIDE on FERTILIZER
PRODUCT CODE:	6344
ACTIVE INGREDIENT(S):	Sulfentrazone*; Prodiamine**
CHEMICAL FAMILY:	Aryl Triazolinones*; Dinitro analine**
MOLECULAR FORMULA:	$C_{11}H_{10}Cl_2F_2N_4O_3S$ (sulfentrazone); $C_{13}H_{17}F_3N_4O_4$ (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
1735 Market Street
Philadelphia, PA 19103
(215) 299 6000 (General Information)

EMERGENCY TELEPHONE NUMBERS

(800) 331-3148 (FMC - U.S.A. & Canada)
(716) 735-3765 (FMC - Reverse charges)

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

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Light-yellow to yellow granular, with a fertilizer-like 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.
- Expected to be moderately irritating to the skin.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either inhaling or coming into contact with the skin. Symptoms of overexposure include convulsions, decreased locomotion, tearing, increased sensitivity to touch, bloody discharge from the nose and incoordination.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt.%	EC No.	EC Class
Sulfentrazone	122836-35-5	0.1	None	Not classified
Prodiamine	29091-21-2	0.2	249-421-3	Not classified
Fertilizer		<99.2	None	Not classified

4. FIRST AID MEASURES

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

SKIN: Remove contaminated clothing and thoroughly wash with soap and water. If irritation occurs and persists, contact a medical doctor.

INGESTION: Drink 1 or 2 glasses of water and induce vomiting by touching the back of the throat with a finger. Never induce vomiting or give anything by mouth to an unconscious person. Contact a medical doctor.

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

NOTES TO MEDICAL DOCTOR: This product is expected to have low oral, dermal and inhalation toxicity. It is mildly irritating to the eyes, and is expected to be moderately irritating and non-sensitizing to the skin. Reversible skin sensations (paresthesia) may occur and ordinary skin salves have been found useful in reducing discomfort. 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_2 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.

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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. 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".

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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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

Chemical Name	ACGIH	OSHA	Supplier
Fertilizer	3 mg/m^3 (STEL) (respirable fraction)	5 mg/m^3 (STEL) (respirable fraction)	15 mg/m^3 (PEL) (total dust) 10 mg/m^3 (TWA) (total dust)

ENGINEERING CONTROLS: No open flames. Prevent deposition of dust; use closed system, consider use of dust explosion-proof electrical equipment and lighting. Use local exhaust at all process locations where dust may be emitted. Ventilate all transport vehicles prior to unloading.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For dust exposure, wear chemical protective goggles or a face shield.

RESPIRATORY: For dust exposures 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 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:	Fertilizer-like
APPEARANCE:	Light-yellow to yellow granules
MOLECULAR WEIGHT:	387.19 (sulfentrazone) 350.3 (prodiamine)

pH:	6.0
SPECIFIC GRAVITY:	0.8 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: No data available for the formulation.
Similar product: Moderately irritating (rabbit)

DERMAL LD_{50}: No data available for the formulation.
Similar product: > 5,000 mg/kg (rat)

ORAL LD_{50}: No data available for the formulation.
Similar product: > 5,000 mg/kg (rat)

INHALATION LC_{50}: No data available for the formulation.
Similar product: > 2.19 mg/l (4 h) (rat)

SENSITIZATION: No data available for the formulation.
Similar product: Non-sensitizing (guinea pig)

ACUTE EFFECTS FROM OVEREXPOSURE: This product is expected to have low oral, dermal and inhalation toxicity. It is mildly irritating to the eyes, and is expected to be moderately irritating and non-sensitizing to the skin. Dust generated from granular pulverization during shipping and handling may be harmful if inhaled. Excessive exposure to dust may irritate the respiratory system, skin and eyes.

Signs of toxicity in laboratory animals, with sulfentrazone, included clonic convulsions, ataxia, hypersensitivity to touch, chromorhinorrhea, abdominogenital staining, decreased locomotion, lacrimation, nasal discharge, and squinting eyes.

The ingredient salts, of the fertilizer, in this product may cause diarrhea, purging and flatulence if ingested. Nausea and vomiting could be expected if ingested in large doses. Ingestion may also result in chills and diarrhea.

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.

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
ADDITIONAL INFORMATION:	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)

ADDITIONAL INFORMATION:	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

ADDITIONAL INFORMATION:

defined by ADR.

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

PACKAGING TYPE:	Non-Bulk
ADDITIONAL INFORMATION:	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.: 3808.30.1500
Export from the U.S.A.: 3808.30.0000

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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):
This product does not contain any toxic chemicals subject to the reporting requirements of Section 313, Title III of the SARA (Superfund Amendments and Reauthorization Act) of 1986.

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

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16. OTHER INFORMATION

REVISION SUMMARY:
New MSDS.

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