MATERIAL SAFETY DATA SHEET

GAUNTLET™ HERBICIDE

MSDS Ref. No: F18-20-2
Version: Global
Date Approved: 09/25/2000
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, 91/155/EEC and other regulatory requirements. The information contained herein is for the concentrate as packaged, unless otherwise noted.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: GAUNTLET™ HERBICIDE
PRODUCT CODE: 6103
ACTIVE INGREDIENT: * Sulfentrazone; ** Cloransulam-methyl
CHEMICAL FAMILY: * Aryl triazolinone; ** Triazolopyrimidine sulfonanilide
MOLECULAR FORMULA: $C_{11}H_{10}Cl_2F_2N_4O_3S$ (sulfentrazone); $C_{15}H_{13}ClFN_5O_5S$ (cloransulam-methyl)
SYNONYMS: * FMC 97285; F6285; 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; ** N-(2-carbomethoxy-6-chlorophenyl)-5-ethoxy-7-fluoro(1,2,4)triazolo-[1,5-c]pyrimidine-2-sulfonamide
***Information for Sulfentrazone ** Information for Cloransulam-methyl**

MANUFACTURER

FMC CORPORATION
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103 USA

Emergency Telephone Numbers:

Emergency Phone (FMC) 800-331-3148 (U.S.A. & Canada)
Emergency Phone (FMC) 716-735-3765 (Reverse charges)
CHEMTREC (800) 424-9300 (U.S.A. & Canada)
(202) 483-7616 (All other countries)

2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS #	Wt.%	PEL/TLV	EC No.	EC Class
Sulfentrazone	122836-35-5		None	None	None
Cloransulam-methyl	147150-35-4		3 mg/m3 (supplier)	None	None
Starch	9005-25-8		15 mg/m3 (total dust) 5 mg/m3 (resp fraction) 10 mg/m3	None	None
Surfactant Blend	0000-00-0		None	None	None

Toluene	108 -88-3	200 ppm 300 ppm 50 ppm (skin)	601-021-00-3	R11-20
Methylene chloride	75-09-2	500 ppm (8-hour TWA) 1000 ppm (ceiling) 50 ppm	602-004-00-3	R40

COMMENTS:

COMPOSITION:

Sulfentrazone 75 DF:

Sulfentrazone 75%
Surfactant blend < 12%
Toluene < 2.5%

Cloransulam-methyl 84% DF:

Cloransulam-methyl 84%
Inert ingredients 16%, including
methylene chloride
starch

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS:
- *Light to dark-brown, free-flowing granules with a slight musty odor; **Brown granules with a sweet odor.
- Slightly combustible. May support combustion at elevated temperatures.
- 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.
- These products, as a mixture, are expected to have moderate inhalation toxicity.

* Information for Sulfentrazone 75 DF; ** Information for Cloransulam-methyl 84% DF

POTENTIAL HEALTH EFFECTS: Effects from overexposure may result from inhalation. Symptoms of overexposure may include convulsions, tremors, increased sensitivity to touch and sound, labored breathing, decreased locomotion, tearing, nasal discharge and incoordination.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

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: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. 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: These products, as a mixture, are expected to have moderate inhalation toxicity. It is expected to have low oral and dermal toxicity, and to be mildly irritating to the eyes and slightly irritating to the skin. Sulfentrazone 75 DF contains a granular material (clay) that may cause mechanical irritation to the eyes. Sulfentrazone 75 DF also contains toluene which can product 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

FLASH POINT AND METHOD: >93.3°C (>200°F) (Cloransulam-methyl 84% DF - estimated based on components)

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

FIRE / EXPLOSION HAZARDS: Slightly combustible. This material may support combustion at elevated temperatures.

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.

HAZARDOUS DECOMPOSITION PRODUCTS: * Carbon monoxide, carbon dioxide, nitrogen oxides, sulfur oxides, hydrogen chloride, hydrogen fluoride. **If product is involved in fire, oxides of nitrogen and halogen derivatives may be formed.

* Information for Sulfentrazone 75 DF; ** Information for Cloransulam-methyl 84% DF

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

GENERAL PROCEDURES: 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

ENGINEERING CONTROLS: 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 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).

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.

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.

COMMENTS: Personal protective recommendations for mixing or applying this product are prescribed on the product label. Information stated above provides useful, additional guidance for individuals whose use or handling of this product is not guided by the product label.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: * Slightly musty; ** Sweet

APPEARANCE: * Light to dark-brown, free-flowing granules; ** Brown granules

pH: * 6.5 - 7.5 (5% suspension)

SOLUBILITY IN WATER: * / ** Disperses

DENSITY: * (Bulk) 38 - 40 lb/ft³ @ 20°C

MOLECULAR WEIGHT: 387.19 (sulfentrazone); 430 (cloransulam-methyl)

COMMENTS:
* Information for Sulfentrazone 75 DF; ** Information for Cloransulam-methyl 84% DF

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Excessive heat and fire.

STABILITY: Stable

POLYMERIZATION: Will not occur

INCOMPATIBLE MATERIALS: ** PVA packaging is incompatible (will not dissolve) in liquid fertilizer. For main compounds none reasonably foreseeable.

** Information for Cloransulam-methyl 84% DF

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11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: No data available for the product as a mixture. Expected to be mildly irritating.

SKIN EFFECTS: No data available for the product as a mixture. Expected to be slightly irritating.

DERMAL LD_{50}: No data available for the product as a mixture.

> 5000 mg/kg (rat) (Sulfentrazone 75 DF)
> 2000 mg/kg (rabbit) (Cloransulam-methyl 84% DF)

ORAL LD_{50}: No data available for the produt as a mixture.

= 2416 mg/kg (rat) (Sulfentrazone 75 DF)
> 5000 mg/kg (rat) (Cloransulam-methyl 84% DF)

INHALATION LC_{50}: No data available for the product as a mixture.

= 0.90 mg/L/4 hour (rat) (Sulfentrazone 75 DF)
> 3.77 mg/L/4 hour (rat, aerosol) (Cloransulam-methyl 84% DF)

SENSITIZATION: No data for the product as a mixture. Expected to be non-sensitizing (guinea pig).

ACUTE EFFECTS FROM OVEREXPOSURE: These products, as a mixture, are expected to have moderate inhalation toxicity. It is expected to have low oral and dermal toxicity, and to be mildly irritating to the eyes and slightly irritating to the skin. Signs of toxicity in laboratory animals with Sulfentrazone 75 DF included clonic convulsions, tremors, recumbency, splayed limbs and decreased locomotion. 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 Sulfentrazone 75 DF may cause aspiration of toluene into the lungs which may result in fatal pulmonary edema.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for this product as a mixture. Sulfentrazone, the active ingredient in Sulfentrazone 75 DF, 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. In animal studies, Cloransulam-methyl 84% DF was not found to be carcinogenic, teratogenic or to cause reproductive effects. In-vitro and animal mutagenicity studies were negative.

Target organ effects have been reported in the blood, kidney, liver, testes and thyroid gland. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use. 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 has also resulted in an increased incidence of malformations and decreased fetal weight in laboratory animals.

CARCINOGENICITY:

IARC: Not listed

NTP: Not listed

OSHA: Not listed

OTHER: Not listed

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA:
No data available for the product as a mixture.

Sulfentrazone, the active ingredient in Sulfentrazone 75 DF, 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.

Cloransulam-methyl 84% DF has a measured Log Pow of 1.21. Bioconcentration potential is low (BCF <100 or Log Pow <3).

ECOTOXICOLOGICAL INFORMATION:
No data available for the product as a mixture.

Sulfentrazone:

Fish and aquatic arthropods: LC50 values range from 60.4 mg/L to > 130 mg/L (slightly toxic)
Upland game birds: LD50 > 2250 mg/kg (oral, low toxicity)

Cloransulam-methyl 84% DF:

Material is slightly toxic to aquatic organisms on an acute basis (LC50 between 10 and 100 mg/L in most sensitive species).

LC50 > 150 mg/L (bluegill)
LC50 > 90 mg/L (rainbow trout)
LC50 = 98 mg/L (water flea)
LC50 > 120 mg/L (grass shrimp)
LC50 > 120 mg/L (tidewater silverside)
EC50 > 110 mg/L (shell deposition inhibition in eastern oyster)
MATC (maximum acceptable toxicant concentration) = 31 mg/L (water flea)

Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg)

LD50 > 2200 (oral, bobwhite)

EC50 = 3.5 µg/L (growth inhibition, green alga)

EC50 = 1.8 mg/L (growth inhibition, diatom)
EC50 = 3.6 mg/L (growth inhibition, marine diatom)
EC50 = 12 µg/L (growth inhibition, blue-green alga)
EC50 = 3.4 µg/L (growth inhibition, duckweed)

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: Completely empty package into application equipment. Then dispose of empty package in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

SPECIAL SHIPPING NOTES:
U.S. DEPARTMENT OF TRANSPORTATION (DOT):

Non-Bulk Freight Classification:
Compound, weed killing (herbicides), NOI. NMFC Item 50320

Notes:
LC50 0.90 mg/L/4 hour. Respirable particles <0.1%. Material is not respirable. Material is not subject to the hazardous materials regulations.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): 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. 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: (methylene chloride) (toluene)

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA REGULATORY (40 CFR 302.4):
Toluene, <2.5%, 1000 lbs.
Methylene chloride, 0.03%, 1000 lbs.

STATE REGULATIONS

PROPOSITION 65 STATEMENT: Cloransulam-methyl 84% DF contains a chemical(s) known to the State of California to cause cancer.

COMMENTS: Australian Hazard Code : 3XE

U.S. EPA Signal Word : CAUTION

16. OTHER INFORMATION

REVISION SUMMARY This MSDS replaces Revision #New MSDS, dated August 2, 2000. Changes in information are as follows:

Sections: 2, 3, 5, 9, 10, 11, 12, 15, and 16