

MATERIAL SAFETY DATA SHEET

COMMAND® XTRA HERBICIDE



MSDS Ref. No: F18-9-9
Version: Global
Date Approved: 01/08/2001
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. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: COMMAND® XTRA HERBICIDE

PRODUCT CODE: 1800

ACTIVE INGREDIENT: * Sulfentrazone; ** Clomazone

CHEMICAL FAMILY: *Sulfentrazone; **Clomazone

MOLECULAR FORMULA: C₁₁H₁₀Cl₂F₂N₄O₃S (sulfentrazone); C₁₂H₁₄ClNO₂ (clomazone)

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; ** FMC 57020; 2-(2-chlorophenyl)methyl-4,4-dimethyl-3-isoxazolidinone; IUPAC: 2-(2-chlorobenzyl)-4,4-dimethyl-1,2-oxazolidin-3-one; 2-(2-chlorobenzyl)-4,4-dimethylisoxazolidin-3-one

***Information for Sulfentrazone ** Information for Clomazone**

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 (U.S.): (800) 424-9300 (U.S.A. & Canada)

(202) 483-7616 (All other countries)

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS#</u>	<u>Wt.%</u>	<u>PEL/TLV</u>	<u>EC No.</u>	<u>EC Class</u>
Sulfentrazone	122836-35-5		None	None	None
Clomazone	81777-89-1		None	None	None
Surfactant Blend	0000-00-0		None	None	None
Propylene glycol	57-55-6		10 mg/m3 WEEL	None	None
Polymeric Isocyanates	9016-87-9		None	None	None
Calcium Chloride	10043-52-4		10 mg/m3 (supplier)	None	None

Toluene	108 -88-3	200 ppm 300 ppm 50 ppm (skin)	601-021-00-3 R11-20
---------	-----------	-------------------------------------	---------------------

COMMENTS:**COMPOSITION:****Command Xtra Herbicide B:**

Sulfentrazone 39.6%
Surfactant blend < 7.5%
Propylene glycol < 6.0%
Toluene < 2.0%

Command Xtra Herbicide G:

Clomazone 31.4%
Polymeric isocyanates < 5.0%
Calcium chloride < 4.5%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW**IMMEDIATE CONCERNS:**

- *Off-white liquid with a faint, alcoholic odor; **Brown liquid with a slightly aromatic hydrocarbon 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.
- Highly to slightly toxic to fish and aquatic organisms. Keep out of drains and water courses.

* Information for Command Xtra Herbicide B; **Information for Command Xtra Herbicide G

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either swallowing, inhaling, or coming into contact with the skin or eyes. Symptoms of overexposure include nasal discharge, 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 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: 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, if mixed, are expected to have low oral, dermal and inhalation toxicity. It is expected to be slightly irritating to the skin and non-irritating to the eyes. 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

FLASH POINT AND METHOD: >93°C (>200°F) (TCC) (Command Xtra Herbicide G)

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, oxides of nitrogen, sulfur oxides, hydrogen chloride, hydrogen fluoride and chlorine.

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. Dike to confine spill and absorb with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump waste into a drum and label contents for disposal.

Command Xtra Herbicide B:

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".

Command Xtra Herbicide G:

To clean and neutralize tools and equipment, wash with a 20% solution of potassium hydroxide in methanol. Follow by washing with strong soap and rinsing with water, and add both solutions to the drums of waste already collected.

To clean and neutralize spill areas, spray the area with 20% solution of potassium hydroxide in methanol. Cover the treated area with plastic and let stand for 24 hours. Remove the covering and place in a drum for later disposal. Wash the area, three times, with a strong soap and rinse with water. If spill occurs on a wooden surface, repeat the entire process again. Absorb, as above, any excess liquid and add to the drums of waste already collected. Dispose of drummed waste according to the method outlined in Section 13, "Disposal Considerations".

COMMENTS:

NOTE: If both sides of the container have been ruptured, or if both components are spilled simultaneously, follow the clean-up procedures for Command Xtra Herbicide G as noted above.

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. STORE ABOVE -4°F (-20°C) TO KEEP PRODUCT FROM FREEZING. If frozen, thaw before reuse. 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 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, mist or spray 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, neoprene or Viton® brand. 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: *Faint, alcoholic; **Slight aromatic

APPEARANCE: *Off-white liquid; **Brown liquid

pH: * 5.3 - 6.0 @ 20°C; **6.5 @ 20°C

SOLUBILITY IN WATER: Disperses

SPECIFIC GRAVITY: * 1.206 @ 20°C (water = 1)

MOLECULAR WEIGHT: 387.19 (sulfentrazone); 239.7 (clomazone)

NOTE:

*Information for Command Xtra Herbicide B; **Information for Command Xtra Herbicide G

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Excessive heat and fire.

STABILITY: Stable

POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: No data available for the product as a mixture. Expected to be non-irritating (rabbit)

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

DERMAL LD₅₀: No data available for the product as a mixture.

>2000 mg/kg (rat) (Command Xtra Herbicide B);
>5000 mg/kg (rat) (Command Xtra Herbicide G)

ORAL LD₅₀: No data available for the product as a mixture.

2084 mg/kg (rat) (Command Xtra Herbicide B);
5000 mg/kg (rat) (Command Xtra Herbicide G)

INHALATION LC₅₀: No data available for the product as a mixture.

>2.72 mg/L/4 hour (rat) (Command Xtra Herbicide B)
>5.21 mg/L/4 hour (rat) (Command Xtra Herbicide G)

(maximum attainable concentrations - zero mortalities)

SENSITIZATION: No data available for the product as a mixture.

(Skin) Non-sensitizing (guinea pig) (Command Xtra Herbicide B)
(Skin) Mildly-sensitizing (guinea pig) (Command Xtra Herbicide G)

ACUTE EFFECTS FROM OVEREXPOSURE: These products, if mixed, are expected to have low oral, dermal and inhalation toxicity. It is expected to be slightly irritating to the skin and non-irritating to the eyes, and may be a skin sensitizer. Signs of toxicity in laboratory animals with Command Xtra Herbicide B included clonic convulsions, tremors, recumbency, splayed limbs and decreased locomotion. Signs of toxicity in laboratory animals with Command Xtra Herbicide G included abdominogenital staining, chromorhinorrea, chromodacryorrhea, decreased locomotion, dyspnea, diarrhea, oral and nasal discharge. In humans, ingestion of large amounts of propylene glycol has resulted in reversible central nervous system depression including stupor, rapid breathing and heartbeat, profuse sweating and seizures. Calcium chloride may cause moderate to severe irritation in the eyes which may result in corneal injury. Prolonged or repeated exposure on the skin may cause skin irritation or even burns; the severity of skin irritation may increase on damp or abraded skin. 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 as a mixture, 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 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 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 studies with laboratory animals, clomazone did not cause reproductive toxicity, teratogenicity, or carcinogenicity. Liver enlargement and elevated cholesterol levels are often noted in laboratory animals that have ingested large doses of clomazone during their lifespan. An overall absence of genotoxicity has been demonstrated in tests of mutagenicity, DNA damage and chromosome aberrations. Repeated overexposure to propylene glycol can produce central nervous system depression, hemolysis and minimal kidney damage. 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 (ACGIH)

12. ECOLOGICAL INFORMATION

No data available for the product as a mixture. Data presented below are based on the active ingredients.

ENVIRONMENTAL DATA: 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 ($K_{oc} = 43$), 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.

Clomazone has a moderate rate of degradation in soil (half-life = 24 days), and is stable to hydrolysis over a wide range of pH. The bioconcentration potential for clomazone is low, with a Log Pow of 2.5, and a measured bioconcentration factor (BCF) of 27 - 40. Field studies showed that clomazone does not significantly leach below 15 cm in soil and is, therefore, not expected to enter groundwater.

ECOTOXICOLOGICAL INFORMATION: Sulfentrazone:

Fish and aquatic arthropods: LC50 values range from 60.4 mg/L to >130 mg/L (slightly toxic)
Upland game birds: Oral LD50 > 2,250 mg/kg (low toxicity)

Clomazone:

Freshwater fish: 96-hour LC50 = 19 (Rainbow trout) (slightly toxic)
Freshwater fish: 96-hour LC50 = 34 (Bluegill sunfish) (slightly toxic)
Estuarine invertebrates: 96-hour LC50 = 8.9 mg/L (Pink shrimp) (moderately toxic)
Estuarine fish: LC50 = 6.3 (Atlantic silverside, moderately toxic) - 41 mg/L (Sheepshead minnow, slightly toxic)
Estuarine invertebrate: LC50 = 0.57 mg/L (Mysid) (highly toxic)
Waterfowl / Upland game birds: Oral LD50 > 2510 mg/kg; Dietary LC50 > 5620 ppm (low toxicity)

Care should be taken to avoid contamination of the aquatic environment.

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 which 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)

REPORTABLE QUANTITY (RQ): None

U.S. SURFACE FREIGHT CLASS: Compound, weed killing (herbicide), NOI. NMFC Item 50320.

MARINE POLLUTANT #1: Not listed

OTHER SHIPPING INFORMATION:

NOTE: This product is not a hazardous material nor a dangerous good when transported.

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: (toluene)

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA REGULATORY (40 CFR 302.4):

Toluene, 1.31%, 1000 lbs.

COMMENTS: Australian Hazard Code : 3XE

U.S. EPA Signal Word : CAUTION

16. OTHER INFORMATION

REVISION SUMMARY This MSDS replaces Revision # NewMSDS, dated May 17, 2000. Changes in information were as follows.

Section 15

Command and FMC Logo - FMC Trademarks; Viton - E.I. du Pont de Nemours and Co. Trademark

© 2001 FMC Corporation. All Rights Reserved.