

# MATERIAL SAFETY DATA SHEET

## COMMAND® 3 ME MICROENCAPSULATED HERBICIDE



MSDS Ref. No.: 81777-89-1-6

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Revision No.: 13

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This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

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## 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** COMMAND® 3 ME MICROENCAPSULATED HERBICIDE  
**PRODUCT CODE:** 1693; 6270  
**ACTIVE INGREDIENT(S):** Clomazone  
**CHEMICAL FAMILY:** Herbicide  
**MOLECULAR FORMULA:**  $C_{12}H_{14}ClNO_2$ (clomazone)  
**SYNONYMS:** 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  
**ALTERNATE PRODUCT NAME(S):** Command® 360 ME, Command® 36 CS, Command® 360 CS, Command® CS, Centium™ 36 CS, Cirrus™ 36 CS, Cirrus™ CS, Gamit® 36 CS, Gamit® 360 CS, Gamit® CS

### MANUFACTURER

FMC CORPORATION  
Agricultural Products Group  
1735 Market Street  
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)

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## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW:

- 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 watercourses.

**POTENTIAL HEALTH EFFECTS:** Effects from overexposure result from coming into contact with the skin and eyes. Symptoms of overexposure include nasal discharge.

**MEDICAL CONDITIONS AGGRAVATED:** None presently known.

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### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt. %	EC No.	EC Class
Clomazone	81777-89-1	31.4	None	R20/22-R52; S2-46-29
Polymeric Isocyanates	9016-87-9	1 - 5	None	Not classified
Calcium Chloride	10043-52-4	1 - 5	233-140-8	R36; S2-22-24

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### 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.

**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:** This product has low oral, dermal and inhalation toxicity. It is non-irritating to the eyes and skin. 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<sub>2</sub> 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.

**FLAMMABLE LIMITS:** Not available

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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. 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.

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 a 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".

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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. **STORE ABOVE -4°F (-20°C) TO KEEP PRODUCT FROM FREEZING.** If frozen, thaw before reuse. For re-circulation directions, refer to the product label under "Mixing and Handling" instructions, for "Bulk/Mini-Bulk Containers". 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
Calcium Chloride			10 mg/m <sup>3</sup>

**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 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 nitrile or Viton® brand. 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.

### COMMENTS:

CANADIAN OCCUPATIONAL EXPOSURE LIMITS (OELs)

Polymeric isocyanate  
Alberta: 0.005 ppm; 0.07 mg/m<sup>3</sup> (TWA)

Calcium chloride  
Ontario: 5 mg/m<sup>3</sup> (TWAEV)

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>ODOR:</b>	Slight aromatic
<b>APPEARANCE:</b>	Brown liquid
<b>AUTOIGNITION TEMPERATURE:</b>	Not available
<b>BOILING POINT:</b>	Not available
<b>COEFFICIENT OF OIL / WATER:</b>	Not available
<b>DENSITY / WEIGHT PER VOLUME:</b>	Not available
<b>EVAPORATION RATE:</b>	Not available
<b>FLASH POINT:</b>	> 94 °C (> 201 °F) (TOC)
<b>FREEZING POINT:</b>	Not available
<b>MOLECULAR WEIGHT:</b>	239.7 (clomazone)
<b>ODOR THRESHOLD:</b>	Not available
<b>pH:</b>	6.5 @ 20°C
<b>SOLUBILITY IN WATER:</b>	Disperses
<b>SPECIFIC GRAVITY:</b>	Not available
<b>VAPOR PRESSURE:</b>	Not available

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## 10. STABILITY AND REACTIVITY

<b>CONDITIONS TO AVOID:</b>	Excessive heat and fire.
<b>STABILITY:</b>	Stable
<b>POLYMERIZATION:</b>	Will not occur
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	Carbon monoxide and/or carbon dioxide, oxides of nitrogen, chlorine and hydrogen chloride.

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## 11. TOXICOLOGICAL INFORMATION

**EYE EFFECTS:** Non-irritating

**SKIN EFFECTS:** Non-irritating

**DERMAL LD<sub>50</sub>:** > 5,000 mg/kg (rat)

**ORAL LD<sub>50</sub>:** > 5,000 mg/kg (rat)

**INHALATION LC<sub>50</sub>:** > 5.21 mg/l (4 h) (rat) Maximum attainable concentration - zero mortality

**ACUTE EFFECTS FROM OVEREXPOSURE:** This product has low oral, dermal and inhalation toxicity. It is non-irritating to the eyes and skin. Signs of toxicity noted in laboratory animals included abdominogenital staining, chromorhinorrhea, chromodacryorrhea, decreased locomotion, dyspnea, diarrhea, and oral and nasal discharge. Calcium chloride may cause moderate to severe eye irritation, which may result in corneal injury. Prolonged or repeated exposure of calcium chloride, on the skin, may cause skin irritation or even burns; the severity of skin irritation may increase on damp or abraded skin.

**CHRONIC EFFECTS FROM OVEREXPOSURE:** No data available for the formulation. 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.

**CARCINOGENICITY:**

<b>NTP:</b>	Not listed
<b>IARC:</b>	Not listed
<b>OSHA:</b>	Not listed
<b>OTHER:</b>	(ACGIH) Not listed

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## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL DATA:** 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:** Command 3 ME:

Freshwater fish: 96-hour LC<sub>50</sub> = 592.7 (Rainbow trout) (low toxicity)  
Freshwater invertebrates: 48-hour EC<sub>50</sub> = 491.3 mg/L (Daphnia) (low toxicity)  
Freshwater aquatic plants: EC<sub>50</sub> = 681.47 mg/L (Duckweed) (low toxicity)  
Algae, 96-hour EbC<sub>50</sub> = 160.85 mg/L (low toxicity)

Clomazone Technical:

Freshwater fish: 96-hour LC<sub>50</sub> = 34 mg/L (Bluegill sunfish) (slightly toxic)  
Estuarine invertebrates: 96-hour LC<sub>50</sub> = 8.9 mg/L (Pink shrimp) (moderately toxic)  
Estuarine fish: LC<sub>50</sub> = 6.3 (Atlantic silverside, moderately toxic)  
Estuarine fish: LC<sub>50</sub> = 41 mg/L (Sheepshead minnow, slightly toxic)  
Estuarine invertebrate: LC<sub>50</sub> = 0.57 mg/L (Mysid) (highly toxic)  
Waterfowl / Upland game birds: Oral LD<sub>50</sub> >2510 mg/kg; Dietary LC<sub>50</sub> >5620 ppm (low toxicity)

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

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## 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.

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## 14. TRANSPORT INFORMATION

### U.S. DEPARTMENT OF TRANSPORTATION (DOT)

<b>PACKAGING TYPE:</b>	Non-Bulk
<b>ADDITIONAL INFORMATION:</b>	This material is not a hazardous material as defined by US Department of Transportation at 49 CFR Parts 100 through 185.
<b>PACKAGING TYPE:</b>	Bulk
<b>ADDITIONAL INFORMATION:</b>	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)

<b>PACKAGING TYPE:</b>	Non-Bulk
<b>ADDITIONAL INFORMATION:</b>	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

**PACKAGING TYPE:**

Non-Bulk

**ADDITIONAL INFORMATION:**

This material is not a dangerous good as 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 (IATA) Dangerous Goods Regulations.

**OTHER INFORMATION:**

CANADIAN TRANSPORT (TDG):

PACKAGING TYPE: Bulk & Non-bulk

ADDITIONAL INFORMATION: This material is not a dangerous good as defined by TDG Regulations.

HARMONIZED SYSTEM

Import to the U.S.A.: 3808.93.1500

Export from the U.S.A.: 3808.93.0000

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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 contains the following ingredients subject to Section 313 reporting requirements:  
Polymeric isocyanate



**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)**

**CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):**

Not listed

**FEDERAL INSECTICIDE FUNGICIDE RODENTICIDE ACT**

U.S. EPA Signal Word: CAUTION

**CANADA**

**WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Hazard Classification / Division: D2A  
D2B

**INTERNATIONAL LISTINGS**

CANADIAN NATIONAL POLLUTANT RELEASE INVENTORY (NPRI):

Polymeric isocyanate: Part 1, Group 1 Substance

Australian Hazard Code: Not available

**HAZARD, RISK AND SAFETY PHRASE DESCRIPTIONS:**

Clomazone:

EC Symbols:	Xn	(Harmful)
EC Risk Phrases:	R20/22	(Harmful by inhalation and if swallowed.)
	R52	(Harmful to aquatic organisms.)
EC Safety Phrases:	S2	(Keep out of the reach of children.)
	S46	(If swallowed, seek medical advice immediately and show this container or label.)
	S29	(Do not empty into drains.)

Calcium chloride, (Index #017-013-00-2):

EC Symbols: Xi (Irritant)

EC Risk Phrases:	R36	(Irritating to eyes.)
EC Safety Phrases:	S2	(Keep out of the reach of children.)
	S22	(Do not breathe dust.)
	S24	(Avoid contact with skin.)

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## 16. OTHER INFORMATION

### REVISION SUMMARY:

This MSDS replaces Revision #12, dated May 29, 2007.

Changes in information are as follows:

Section 1 (Product and Company Identification)  
Section 3 (Composition / Information on Ingredients)  
Section 14 (Transport Information)  
Section 15 (Regulatory Information)  
Section 16 (Other Information)

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