

MATERIAL SAFETY DATA SHEET

MustangMAX™ Insecticide



MSDS Ref. No.: 52315-07-8-52

Date Approved: 06/11/2007

Revision No.: 11

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:	MustangMAX™ Insecticide
PRODUCT CODE:	6084; 6209
ACTIVE INGREDIENT(S):	Zeta-cypermethrin (2S)
CHEMICAL FAMILY:	Pyrethroid Pesticide
MOLECULAR FORMULA:	C ₂₂ H ₁₉ Cl ₂ NO ₃ (zeta-cypermethrin 2S)
SYNONYMS:	FMC 291799; (S)-Cyano-(3-phenoxyphenyl)methyl (+)cis-3-(2,2-dichloroethyl)-2,2-dimethylcyclopropanecarboxylate and (S)-cyano-(3-phenoxyphenyl)methyl (+)trans-3-(2,2-dichloroethyl)-2,2-dimethylcyclopropanecarboxylate

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 (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:

- Brown liquid with an aromatic solvent odor.
- Moderately combustible. May support combustion if heated above the product's flash point (see Section 9, "Physical and Chemical Properties" below).
- Thermal decomposition and burning may form toxic by-products.
- For large exposures or fire, wear personal protective equipment.
- Highly toxic to fish and aquatic organisms. Keep out of drains and water courses.
- Moderately irritating if swallowed and moderately irritating to the skin.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either swallowing or inhaling this product. Symptoms of overexposure include tremors, convulsions, increased sensitivity to touch, and incoordination. Contact with this product may produce skin sensations such as numbing, burning or tingling. These skin sensations are reversible and usually subside within 12 hours.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt. %	EC No.	EC Class
Zeta-cypermethrin (2S)	52315-07-8	9.6	257-842-9	Not classified
Aromatic Hydrocarbons	64742-95-6	<32.1	265-199-0	R10-37-51/53-65-66-67; S23-24-43A-57-60-62
Surfactant Blend		<6.5	None	Not classified
Naphthalene	91-20-3	<5.2	202-049-5	R22-40-50/53; S2-36/37- 46-60-61
1-butanol	71-36-3	<1	200-751-6	R10-22-37/38-41-67; S2- 7/9-13-26-37/39-46

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: 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 moderate oral, and low dermal and inhalation toxicity. It is moderately irritating to the skin and mildly irritating to the eyes. Contains aromatic hydrocarbons that may produce a severe pneumonitis if aspirated during vomiting. Consideration should be given to gastric lavage with an endotracheal tube in place. 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.

5. FIRE FIGHTING MEASURES

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

FIRE / EXPLOSION HAZARDS: Moderately combustible. When heated above the flash point, this material releases vapors which, when mixed with air, can burn or be explosive.

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. 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 contaminated area, scrub area with a solution of detergent (e.g. commercial product such as SuperSoap™, Tide®, Spic and Span®, or other high pH detergent) and water. Let solution sit for 5 minutes. Use a stiff brush to scrub affected area. Repeat if necessary to remove visible staining. Additional decontamination can be made by applying bleach (Clorox® or equivalent) to affected area.

Absorb wash-liquid as noted above, remove visibly contaminated soil and place into recovery / disposal container (plastic, open-top steel drum or equivalent). Place all clean-up material in a container, seal and dispose of in accordance with the method outlined in Section 13 "Disposal Considerations" below.

For further information on spill clean-up, waste disposal, or return of salvaged product, call the FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.

7. HANDLING AND STORAGE

HANDLING AND STORAGE: Store in a cool, dry, well-ventilated place. Keep out of reach of children and animals. Do not store below -6.6°C (20°F). If solids are observed, warm above 4.4°C (40°F) and roll or shake containers to re-dissolve. Do not use or store near heat, open flame or hot surfaces. Store in original containers only. Carefully open containers. After partial use, replace lids and close tightly. 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
Aromatic Hydrocarbons			18 ppm
Naphthalene	10 ppm (TWA) 15 ppm (STEL)	10 ppm (TWA) 50 mg/m ³ (TWA) 15 ppm (STEL)	
1-butanol	20 ppm (TWA) (ceiling)	100 ppm (TWA) (ceiling) 50 ppm (PEL) (ceiling)	

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, neoprene 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:

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:	Aromatic solvent
APPEARANCE:	Brown liquid
DENSITY / WEIGHT PER VOLUME:	8.3 lb/gal. (1000 g/L)
FLASH POINT:	> 98 °C (> 208 °F) (TCC)
MOLECULAR WEIGHT:	416.3 (zeta-cypermethrin)
pH:	3.9
SOLUBILITY IN WATER:	Emulsifies
SPECIFIC GRAVITY:	1.0 g/mL @ 20°C

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:	Excessive heat and fire.
STABILITY:	Stable
POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	Carbon monoxide, carbon dioxide, hydrogen cyanide, chlorine and hydrogen chloride.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Mildly irritating (rabbit)

SKIN EFFECTS: Moderately irritating (rabbit)

DERMAL LD₅₀: > 5,000 mg/kg (rat)

ORAL LD₅₀: 157 mg/kg (rat)

INHALATION LC₅₀: 3.3 mg/l (4 h) (rat)

SENSITIZATION: This product is not a skin sensitizer.

ACUTE EFFECTS FROM OVEREXPOSURE: This product has moderate oral, and low dermal and inhalation toxicity. It is moderately irritating to the skin and mildly irritating to the eyes. Signs of toxicity in laboratory animals included tremors, tonic - clonic convulsions, loss of muscle control, rales, bloody oral discharge, hypersensitivity to touch and ataxia. Experience to date indicates that contact

with this product may produce skin sensations such as numbing, burning or tingling. These sensations are reversible and usually subside within 12 hours. Inhalation of aromatic hydrocarbon vapors may cause dizziness, disturbances in vision, drowsiness, respiratory irritation, and eye, skin and mucous membrane irritation. Vomiting after ingestion of this product may cause aspiration of aromatic hydrocarbons into the lungs, which may result in fatal pulmonary edema. Exposure to butanol vapors may produce headaches, drowsiness and irritation of the nose and throat. Excessive exposures to butanol liquid or vapors may result in contact dermatitis and irritation of the mucous membranes. Naphthalene, if ingested, may cause red blood cell hemolysis, especially in individuals with glucose-6-phosphate dehydrogenase deficiency.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the formulation. In studies with laboratory animals, zeta-cypermethrin did not cause reproductive effects or teratogenicity in laboratory animals. An overall absence of genotoxicity has been demonstrated in tests of mutagenicity, DNA damage and chromosome aberrations. Chronic exposure to aromatic hydrocarbons may cause headaches, dizziness, loss of sensations or feelings (such as numbness), and liver and kidney damage. Naphthalene causes cataracts in humans, rats, rabbits and mice. In 2-year inhalation studies conducted by the National Toxicology Program (NTP), there was no evidence of carcinogenic activity of naphthalene in male mice, there was some evidence of carcinogenic activity in female mice and there was clear evidence of carcinogenic activity in male and female rats. Inhalation studies conducted by the International Agency for Research on Cancer (IARC) have found that there is inadequate evidence of carcinogenicity in humans, therefore, IARC has classified naphthalene as a Group 2B (possibly carcinogenic to humans); however, IARC has found that there is sufficient evidence of carcinogenicity in experimental animals. Disturbances in hearing and balance have been reported in workers exposed to butanol vapors.

CARCINOGENICITY:

Chemical Name	IARC	NTP	OSHA	Other
Naphthalene	Listed	Listed	Not listed	(ACGIH) Not listed

12. ECOLOGICAL INFORMATION

The physical and environmental properties, as well as the environmental toxicology of zeta-cypermethrin, are similar to cypermethrin. Unless otherwise indicated, the data presented below pertains to cypermethrin.

ENVIRONMENTAL DATA: Cypermethrin is rapidly degraded in soil with a half-life of 2 to 4 weeks. It is readily hydrolyzed under basic conditions (pH = 9), but under acidic and neutral conditions, hydrolysis half-life can be 20 to 29 days. Cypermethrin has a high affinity for organic matter and a Log Pow of 5.0; yet because of the ease with which the material undergoes degradation, it has a very low potential for bioconcentration (BCF = 17) and is not mobile in soil.

ECOTOXICOLOGICAL INFORMATION: Zeta-cypermethrin is considered highly toxic to fish and aquatic arthropods and has LC₅₀ values which range from 0.002 µg/L to 2.37 µg/L. These values are comparable to cypermethrin. Care should be taken to avoid contamination of the aquatic environment. Cypermethrin is slightly toxic to birds, and oral LD₅₀ values are greater than 10,248 mg/kg.

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
PROPER SHIPPING NAME:	Pyrethroid pesticide, liquid, toxic
TECHNICAL NAME(S):	Zeta-cypermethrin (2S)
PRIMARY HAZARD CLASS / DIVISION:	6.1
UN/NA NUMBER:	UN 3352
PACKING GROUP:	III
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	Pyrethroid pesticide, liquid, toxic (zeta-cypermethrin 2S), UN3352
PACKAGING TYPE:	Bulk
PROPER SHIPPING NAME:	Pyrethroid pesticide, liquid, toxic
TECHNICAL NAME(S):	Zeta-cypermethrin (2S)
PRIMARY HAZARD CLASS / DIVISION:	6.1
UN/NA NUMBER:	UN 3352
PACKING GROUP:	III
MARINE POLLUTANT:	Zeta-cypermethrin (2S)
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	3352
REPORTABLE QUANTITY (RQ):	Naphthalene
ADDITIONAL INFORMATION:	Naphthalene is in an "RQ" quantity when this material meets or exceeds 1,923 pounds (231.7 gallons) per bulk package.

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Pyrethroid pesticide, liquid, toxic
TECHNICAL NAME(S):	Zeta-cypermethrin (2S)
PRIMARY HAZARD CLASS / DIVISION:	6.1
UN/NA NUMBER:	UN 3352
PACKING GROUP:	III
MARINE POLLUTANT:	Zeta-cypermethrin (2S)
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	Pyrethroid pesticide, liquid, toxic (zeta-cypermethrin 2S), UN3352, Marine Pollutant
ADDITIONAL INFORMATION:	EmS Number: F-A, S-A

ADR - EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Pyrethroid pesticide, liquid, toxic
TECHNICAL NAME(S):	Zeta-cypermethrin (2S)
PRIMARY HAZARD CLASS / DIVISION:	6.1
CLASSIFICATION CODE:	T6
UN/NA NUMBER:	UN3352
PACKING GROUP:	III
HAZARD IDENTIFICATION NUMBER:	60
MARINE POLLUTANT:	Zeta-cypermethrin (2S)
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	UN3352 + Marine Pollutant

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

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Pyrethroid pesticide, liquid, toxic
TECHNICAL NAME(S):	Zeta-cypermethrin (2S)
PRIMARY HAZARD CLASS / DIVISION:	6.1
UN/NA NUMBER:	UN3352
PACKING GROUP:	III
LABEL(S):	6.1
LIMITED QUANTITY:	Y611 / 2L
LIMITED QUANTITY: PASSENGER / CARGO:	611 / 60L
LIMITED QUANTITY: CARGO:	618 / 220L
ADDITIONAL INFORMATION:	Country of origin or destination regulations may require the addition of "Marine Pollutant" to the marks and shipping paper description. Marks: Pyrethroid pesticide, liquid, toxic (zeta-cypermethrin (2S)), UN3352 Marine Pollutant: Zeta-cypermethrin (2S)

OTHER INFORMATION:

HARMONIZED SYSTEM
Import to the U.S.A.: 3808.91.2500
Export from the U.S.A.: 3808.91.0000

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, Fire

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:
Naphthalene

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

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

Listed

<u>Chemical Name</u>	<u>RQ</u>
Naphthalene	100 lb
1-butanol	5,000 lb

FEDERAL INSECTICIDE FUNGICIDE RODENTICIDE ACT

U.S. EPA Signal Word: WARNING

INTERNATIONAL LISTINGS

Australian Hazard Code: 3XE

HAZARD, RISK AND SAFETY PHRASE DESCRIPTIONS:

Aromatic Hydrocarbons, (Index #649-356-00-4):

EC Symbols: Xn (Harmful)
 T (Toxic)

EC Risk Phrases:	R10	(Flammable)
	R37	(Irritating to respiratory system.)
	R51/53	(Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.)
	R65	(Harmful: may cause lung damage if swallowed.)
	R66	(Repeated exposure may cause skin dryness or cracking.)
	R67	(Vapors may cause drowsiness and dizziness.)
EC Safety Phrases:	S23	(Do not breathe gas, fumes, vapor, or spray)
	S24	(Avoid contact with skin.)
	S43A	(In case of fire use sand, earth, chemical powder or foam.)
	S57	(Use appropriate container to avoid environmental contamination.)
	S60	(This material and its container must be disposed of as hazardous waste)
	S62	(If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.)

Notes For Preparation:

Nota H applies to the product or one or more of its components. Annex 1
 Nota P of Annex 1 applies to the product or one or more of its components.

Naphthalene, (Index #601-052-00-2):

EC Symbols:	Xn	(Harmful)
	N	(Dangerous for the environment)
EC Risk Phrases:	R22	(Harmful if swallowed.)
	R40	(Possible risks of irreversible effects.)
	R50	(Very toxic to aquatic organisms.)
	R53	(May cause long-term adverse effects in the aquatic environment.)
EC Safety Phrases:	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.)
	S60	(This material and its container must be disposed of as hazardous waste)
	S61	(Avoid release to the environment. Refer to special instructions/safety data sheets.)

1-butanol, (Index #603-004-00-6):

EC Symbols:	Xi	(Irritant)
	Xn	(Harmful)

EC Risk Phrases:	R10	(Flammable)
	R22	(Harmful if swallowed.)
	R37/38	(Irritating to respiratory system and to skin.)
	R41	(Risk of serious damage to eyes.)
	R67	(Vapors may cause drowsiness and dizziness.)
EC Safety Phrases:	S2	(Keep out of the reach of children.)
	S7/9	(Keep container tightly closed and in a well-ventilated place.)
	S13	(Keep away from food, drink and animal feeding stuffs.)
	S26	(In case of contact with eyes, rinse immediately with plenty of water and seek medical advice)
	S37/39	(Wear suitable gloves and eye/face protection.)
	S46	(If swallowed, seek medical advice immediately and show this container or label.)

16. OTHER INFORMATION

REVISION SUMMARY:

This MSDS replaces Revision #10, dated August 02, 2005.

Changes in information are as follows:

Section 1 (Product and Company Identification)

Section 14 (Transport Information)

Section 16 (Other Information)

MustangMAX and FMC - FMC Trademarks

Viton - E.I. du Pont de Nemours & Co. Trademark

SuperSoap - Trademark of Weba Technologies, Inc.; Tide - Trademark of Proctor and Gamble; Spic and

Span: Trademark of The Spic and Span Company; Clorox - Trademark of The Clorox Company

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