

MATERIAL SAFETY DATA SHEET

HERO™ EW INSECTICIDE



MSDS Ref. No.: F18-61-5

Date Approved: 04/03/2007

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:	HERO™ EW INSECTICIDE
PRODUCT CODE:	6352
ACTIVE INGREDIENT(S):	Bifenthrin*; Zeta-cypermethrin**
CHEMICAL FAMILY:	Pyrethroid Pesticide
MOLECULAR FORMULA:	C ₂₃ H ₂₂ ClF ₃ O ₂ (bifenthrin); C ₂₂ H ₁₉ Cl ₂ NO ₃ (zeta-cypermethrin)
SYNONYMS:	FMC 54800; (2-methyl[1,1'-biphenyl]-3-yl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate; IUPAC: 2-methylbiphenyl-3-ylmethyl (Z)-(1RS)-cis-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylate*; FMC 233570; Cyclopropanecarboxylic acid, cis-(+)-3-(2,2-dichloroethenyl)-2,2-dimethyl-, (S)-cyano(3-phenoxyphenyl)methyl ester, AND Cyclopropanecarboxylic acid, trans-(+)-3-(2,2-dichloroethenyl)-2,2-dimethyl-, (S)-cyano(3-phenoxyphenyl)methyl ester)**

ADDITIONAL SYNONYM(s): F6126 EW

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:

- Off-white liquid with an aromatic solvent odor.
- Slightly combustible. May support combustion at elevated temperatures.
- Thermal decomposition and burning may form toxic by-products.
- Highly toxic to fish and aquatic organisms. Keep out of drains and water courses.
- Moderate oral toxicity and moderately irritating to the eyes.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from swallowing, or coming into contact with eyes and skin. Symptoms of overexposure include tremors, convulsions, increased sensitivity to touch, and incoordination. Contact with zeta-cypermethrin may produce skin sensations such as numbing, burning and tingling. These 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
Bifenthrin	82657-04-3	9.72	None	R25-20-43-50/53; S1/2-23-24-37-38-45-29
Zeta-cypermethrin	52315-07-8	3.24	257-842-9	Not classified
Aromatic Hydrocarbons	64742-94-5	<14	265-198-5	R65; S2-23-24-62
Surfactant Blend		<19	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: Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

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 eyes and slightly irritating to the skin. It is also non-sensitizing to the skin. 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: 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.

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: Do not freeze. Keep out of reach of children and animals. Store in original containers only; and, in a cool, dry, well-ventilated place. Do not use or store near heat, open flame or hot surfaces. Carefully open containers. After partial use, replace lid and close tightly. Do not put concentrate or dilute material into food or drink containers. 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

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 hydrocarbon
APPEARANCE:	Off-white liquid
DENSITY / WEIGHT PER VOLUME:	8.83 lb/gal. (1.058 g/mL)
FLASH POINT:	> 98.89 °C (> 210 °F)
MOLECULAR WEIGHT:	422.9 (bifenthrin) 416.3 (zeta-cypermethrin)
pH:	4.2 at 24.9°C (76.8°F)

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: Moderately irritating (rabbit)

SKIN EFFECTS: Slightly irritating (rabbit)

DERMAL LD₅₀: > 5,000 mg/kg (rat)

ORAL LD₅₀: 175 mg/kg (rat)

INHALATION LC₅₀: > 2.12 mg/l (4 h) (rat)

SENSITIZATION: (Skin) Non-sensitizing (mouse)

ACUTE EFFECTS FROM OVEREXPOSURE: This product has moderate oral and, low dermal and inhalation toxicity. It is moderately irritating to the eyes and slightly irritating to the skin. It is also non-sensitizing to the skin.

Large doses of bifenthrin ingested by laboratory animals produced signs of toxicity including convulsions, tremors and bloody nasal discharge. Bifenthrin does not cause acute delayed neurotoxicity. Experience to date indicates that contact with bifenthrin may occasionally produce skin sensations such as rashes, numbing, burning or tingling. These sensations are reversible and usually subside within 12 hours.

Large doses of zeta-cypermethrin, ingested by laboratory animals, may produce signs of toxicity including tremors, incoordination, convulsions, staggered gait, and oral discharge. Experience to date indicates that contact with zeta-cypermethrin may produce skin sensations such as numbing, burning or tingling. These sensations are reversible and usually subside within 12 hours.

Experience to date indicates that contact with the active ingredients in this product may produce skin sensations such as numbing, burning, and 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.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the formulation. In studies with laboratory animals, bifenthrin did not cause reproductive toxicity or teratogenicity. Tremors were associated with repeated exposure of laboratory animals to bifenthrin. In lifetime feeding studies conducted with laboratory animals, a slight increase in the incidence of urinary bladder tumors at the highest dose in male mice was considered to be an equivocal response, not evidence of a clear compound-related effect. The overall absence of genotoxicity has been demonstrated in mutagenicity tests with bifenthrin.

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.

12. ECOLOGICAL INFORMATION

No data available for the formulation. Data presented below are based on the active ingredients. 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: Bifenthrin has moderate stability in the soil under aerobic conditions (half-life range from 65 - 125 days depending on soil type) and is stable at a wide range of pH values. Bifenthrin has a high Log Pow (6.6), a high affinity for organic matter, and is not mobile in soil. Therefore, there is little potential for movement into ground water. There is the potential for bifenthrin to bioconcentrate (BCF <2,000).

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: Bifenthrin is highly toxic to fish and aquatic arthropods and LC₅₀ values range from 0.0038 to 17.8 µg/L. In general, the aquatic arthropods are the most sensitive species. Care should be taken to avoid contamination of the aquatic environment. Bifenthrin had no effect on mollusks at its limit of water solubility. Bifenthrin is only slightly toxic to both waterfowl and upland game birds (LD₅₀ values range from 1,800 mg/kg to >2,150 mg/kg).

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):	Bifenthrin, Zeta-cypermethrin
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

(bifenthrin, zeta-cypermethrin), UN 3352

PACKAGING TYPE:	Bulk
PROPER SHIPPING NAME:	Pyrethroid pesticide, liquid, toxic
TECHNICAL NAME(S):	Bifenthrin, Zeta-cypermethrin
PRIMARY HAZARD CLASS / DIVISION:	6.1
UN/NA NUMBER:	UN 3352
PACKING GROUP:	III
MARINE POLLUTANT:	Bifenthrin, Zeta-cypermethrin
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	3352

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Pyrethroid pesticide, liquid, toxic
TECHNICAL NAME(S):	Bifenthrin, Zeta-cypermethrin
PRIMARY HAZARD CLASS / DIVISION:	6.1
UN/NA NUMBER:	UN 3352
PACKING GROUP:	III
MARINE POLLUTANT:	Bifenthrin, Zeta-cypermethrin
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	Pyrethroid pesticide, liquid, toxic (bifenthrin, zeta-cypermethrin), UN 3352 + 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):	Bifenthrin, Zeta-cypermethrin
PRIMARY HAZARD CLASS / DIVISION:	6.1

CLASSIFICATION CODE:	T6
UN/NA NUMBER:	UN3352
PACKING GROUP:	III
HAZARD IDENTIFICATION NUMBER:	60
MARINE POLLUTANT:	Bifenthrin, Zeta-cypermethrin
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):	Bifenthrin, Zeta-cypermethrin
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:	<p>Marks: Pyrethroid pesticide, liquid, toxic (bifenthrin, zeta-cypermethrin), UN 3352 + Marine Pollutant</p> <p>Remarks: This material is not a "Marine Pollutant" when shipped to, from or within the USA in non-bulk packages. Marks are shown for shipment to, from or within those countries requiring "Marine Pollutant" identification when shipped by aircraft.</p>

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:

Bifenthrin

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: WARNING

INTERNATIONAL LISTINGS

Australian Hazard Code: 3XE

HAZARD, RISK AND SAFETY PHRASE DESCRIPTIONS:

Bifenthrin:

EC Symbols:

T	(Toxic)
Xn	(Harmful)
N	(Dangerous for the environment)

EC Risk Phrases:	R25	(Toxic if swallowed.)
	R20	(Harmful by inhalation.)
	R43	(May cause sensitization by skin contact.)
	R50/53	(Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.)
EC Safety Phrases:	S1/2	(Keep locked up and out of reach of children.)
	S23	(Do not breathe gas, fumes, vapor, or spray)
	S24	(Avoid contact with skin.)
	S37	(Wear suitable gloves.)
	S38	(In case of insufficient ventilation, wear suitable respiratory equipment.)
	S45	(In case of accident or if you feel unwell, seek medical advice immediately - show the label where possible.)
	S29	(Do not empty into drains.)

Notes For Preparation:

CLASSIFICATION: Mandatory labeling (self-classification) of hazardous substances: applicable

Aromatic Hydrocarbons, (Index #649-424-00-3):

EC Symbols:	Xn	(Harmful)
EC Risk Phrases:	R65	(Harmful: may cause lung damage if swallowed.)
EC Safety Phrases:	S2	(Keep out of the reach of children.)
	S23	(Do not breathe gas, fumes, vapor, or spray)
	S24	(Avoid contact with skin.)
	S62	(If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.)

16. OTHER INFORMATION

REVISION SUMMARY:

New MSDS.

Hero and FMC Logo - Trademarks of FMC Corporation

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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