Material Safety Data Sheet

Hero® EW Insecticide

MSDS #: 6352-A
Revision Date: 2013-09-30
Version 1.01

This MSDS has been prepared to meet U.S. OSHA Hazard Communication Standard 29 CFR 1910.1200
And Canadian Workplace Hazardous Materials Information System (WHMIS) requirements.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name Hero® EW Insecticide

Formula code 6322-A

Active Ingredient(s) Bifenthrin, 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; (+/-)-α -cyano(3-phenoxyphenyl)methyl (+/-) cis, trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate; IUPAC: (RS)- α -cyano-3-phenoxybenzyl (1RS)-cis-trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate;

Chemical Family Pyrethroid Pesticide

Recommended use: Insecticide

Manufacturer

FMC Corporation
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103
General Information:
Phone: (215) 299-6000
E-Mail: msdsinfo@fmc.com

Emergency telephone number

Medical Emergencies:
1 800 / 331-3148 (PROSAR - U.S.A. & Canada)
1 651 / 632-6793 (PROSAR - All Other Countries - Collect)
For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)

2. HAZARDS IDENTIFICATION

Appearance off-white liquid

Physical state Liquid

Odor hydrocarbon-like

Physical or Chemical Hazards Keep away from heat, sparks, and open flame.

Potential health effects
Principle Routes of Exposure Eye contact, Skin contact, Inhalation, Ingestion.

Acute effects

Eyes	May cause moderate eye irritation.
Skin	Substance may cause slight skin irritation.
Inhalation	May cause irritation of respiratory tract. May cause additional effects as listed under "Ingestion".
Ingestion	Toxic if swallowed. Potential for aspiration if swallowed. May cause central nervous system depression. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic effects Repeated or prolonged exposure may cause central nervous system effects. Chronic exposure to aromatic hydrocarbons may cause liver and kidney damage.

Environmental hazard Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

Chemical Name	CAS-No	Weight %
Naphtha (petroleum), heavy aromatic	64742-94-5	10-15
Bifenthrin	82657-04-3	9.72
Glycerin	56-81-5	5-10
2-Methylnaphthalene	91-57-6	<6
Zeta-cypermethrin (F2700)	52315-07-8	3.24
1-Methylnaphthalene	90-12-0	<4

4. FIRST AID MEASURES

Eye contact: Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Inhalation: Move person to fresh air. If person is not breathing, call 911 (within the U.S. and Canada) or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not induce vomiting or give anything by mouth to an unconscious person.

Notes to physician: Contains petroleum distillate. Vomiting may cause aspiration pneumonia. This product is a pyrethroid. If large amounts have been ingested, the stomach and intestines should be evacuated. Treatment is symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and so should be avoided.

5. FIRE-FIGHTING MEASURES

Flash Point	> 98.89 °C / > 210 °F
Sensitivity to Mechanical Impact	Not applicable
Sensitivity to Static Discharge	Not applicable

Suitable extinguishing media Foam. Carbon dioxide (CO_2). Dry chemical. Water spray or fog.

Protective equipment and precautions for firefighters As in any fire, wear self-contained breathing apparatus and full protective gear. Isolate fire area. Evaluate downwind.

NFPA

Health Hazard	2
Flammability	1
Stability	0
Special Hazards	-

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Isolate and post spill area. Remove all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. For personal protection see section 8.

Environmental precautions

Keep people and animals away from and upwind of spill/leak. Keep material out of lakes, streams, ponds, and sewer drains.

Methods for containment

Dike to prevent runoff. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up

Clean and neutralize spill area, tools and equipment by washing with bleach water and soap. Absorb rinsate and add to the collected waste. Waste must be classified and labeled prior to recycling or disposal. Dispose of waste as indicated in Section 13.

Other

For further clean-up instructions call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.

7. HANDLING AND STORAGE

Handling

Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

Storage

Keep in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep out of reach of children and animals. Store in original container only.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
Glycerin 56-81-5		TWA: 15 mg/m³ TWA: 5 mg/m³		
2-Methylnaphthalene 91-57-6	S* TWA: 0.5 ppm			
1-Methylnaphthalene 90-12-0	S* TWA: 0.5 ppm			
Chemical Name	**British Columbia**	**Quebec**	**Ontario TWAEV**	**Alberta**
Glycerin 56-81-5	TWA: 10 mg/m³ TWA: 3 mg/m³	TWA: 10 mg/m³	TWA: 10 mg/m³	TWA: 10 mg/m³
2-Methylnaphthalene 91-57-6	TWA: 0.5 ppm Skin		TWA: 0.5 ppm Skin	
1-Methylnaphthalene 90-12-0	TWA: 0.5 ppm Skin		TWA: 0.5 ppm Skin	

Occupational exposure controls

Engineering measures

Apply technical measures to comply with the occupational exposure limits. Ensure adequate ventilation, especially in confined areas. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

Personal Protective Equipment

General Information

If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.

Respiratory protection	For dust, splash, mist or spray exposures wear full-face elastomeric half mask respirator with appropriate cartridges and/or filters, which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization).
Eye/face protection	For dust, splash, mist or spray exposure, wear chemical protective goggles or a face-shield.
Skin and body protection	Wear long-sleeved shirt, long pants, socks, shoes, and gloves.
Hand protection	Protective gloves
Hygiene measures	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 or bathe at the end of working. Remove and wash contaminated clothing before re-use. Launder work clothing separately from regular household laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	off-white liquid
Color	off-white
Physical state	Liquid
Odor	hydrocarbon-like
pH	4.2 @ 24.9°C
Melting Point/Range	No information available.
Freezing point	No information available.
Boiling Point/Range	Not applicable
Flash Point	> 98.89 °C / > 210 °F
Evaporation rate	Not applicable
Vapor pressure	No information available.
Vapor density	No information available.
Density	8.83 lbs/gal (1.058 g/mL)
Water solubility	No information available
Percent volatile	No information available.
Partition coefficient:	Not applicable
Viscosity	No information available.

10. STABILITY AND REACTIVITY

Stability	Stable under recommended storage conditions.
Conditions to avoid	Heat, flames and sparks
Hazardous decomposition products	Carbon oxides. Hydrogen chloride. Hydrogen cyanide, Chlorine.
Hazardous polymerization	Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute effects

Acute Toxicity
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.

Eye contact	Moderately irritating to skin
Skin contact	Slightly or non-irritating (rabbit)
Ingestion	Potential for aspiration if swallowed. Vomiting after ingestion of this product may cause aspiration of aromatic hydrocarbons into the lungs, which may result in fatal pulmonary edema.
Inhalation	Inhalation of aromatic hydrocarbon vapors may cause dizziness, disturbances in vision, drowsiness, respiratory irritation, and eye, skin and mucous membrane irritation.
LD50 Dermal	> 5000 mg/kg (Rat)
LD50 Oral	175 mg/kg (Rat)
LC50 Inhalation:	> 2.12 mg/L 4 hr (Rat)
Sensitization	Non-sensitizing

Chronic effects

Chronic Toxicity	Repeated or prolonged exposure may cause central nervous system effects. Chronic exposure to aromatic hydrocarbons may cause liver and kidney damage.
Carcinogenicity	Bifenthrin: Not recognized as carcinogenic by Research Agencies (IARC, NTP, OSHA, ACGIH). Did not show carcinogenic effects in animal experiments. Cypermethrin caused an increase in benign lung tumors in mice, but not in rats, and was negative for genotoxicity. EPA has classified zeta-cypermethrin as a possible human carcinogen based on this information, but does not regulate based on its low cancer risk.
Mutagenicity	Bifenthrin, Zeta-cypermethrin: Not genotoxic.
Reproductive toxicity	Zeta-cypermethrin: No toxicity to reproduction.
Neurological Effects	Tremors were associated with chronic exposure of laboratory animals to bifenthrin, which may disappear with continued exposure. Cypermethrin did not cause neurotoxicity in animal experiments.
Developmental Toxicity	Bifenthrin, Zeta-cypermethrin: Not teratogenic in animal studies.
Target Organ Effects	Bifenthrin: A slight increase in male mouse urinary bladder tumors at the highest dose was probably not of toxicological concern.
Chronic Toxicity - Other Ingredient(s)	Chronic exposure to aromatic hydrocarbons may cause headaches, dizziness, loss of sensations or feelings (such as numbness), and liver and kidney damage.

Chemical Name	ACGIH	IARC	NTP	OSHA	NIOSH - Target Organs
Glycerin					respiratory system,skin,eyes,kidneys

12. ECOLOGICAL INFORMATION

Marine pollutant Zeta-cypermethrin F2700 (Bulk Only)
Ecotoxicity

Bifenthrin (82657-04-3)				
Active Ingredient(s)	Duration	Species	Value	Units:
Bifenthrin	EC50	Aquatic organisms	0.11 - 0.57	µg/L

Bifenthrin	96 h LC50	Fish	0.1 - 2.0	µg/L
Bifenthrin	LD50 Oral	Bobwhite quail	>1800	mg/kg
Bifenthrin	LD50 Oral	Mallard duck	>2150	mg/kg
Bifenthrin	LD50	Bee	0.1	µg/bee

Zeta-cypermethrin (F2700) (52315-07-8)				
Active Ingredient(s)	Duration	Species	Value	Units:
Zeta-cypermethrin	LC50	Aquatic organisms	0.005 - 0.15	µg/L
	LC50	Fish	0.07 - 2.37	µg/L
	LD50 Oral	Bobwhite quail	>2000	mg/kg
	LD50	Bee	0.0014 - 0.043	µg/bee

Chemical Name	**Toxicity to algae**	**Toxicity to fish**	**Toxicity to microorganisms**	**Toxicity to daphnia and other aquatic invertebrates**
Naphtha (petroleum), heavy aromatic	2.5 mg/L EC50 72 h (Skeletonema costatum)	LC50= 19 mg/L Pimephales promelas 96 h LC50= 2.34 mg/L Oncorhynchus mykiss 96 h LC50= 1740 mg/L Lepomis macrochirus 96 h LC50= 45 mg/L Pimephales promelas 96 h LC50= 41 mg/L Pimephales promelas 96 h		EC50 = 0.95 mg/L 48 h
Bifenthrin		LC50 0.0001 - 0.00019 mg/L Oncorhynchus mykiss 96 h LC50 0.0003 - 0.00038 mg/L Lepomis macrochirus 96 h		EC50 0.00135 - 0.00195 mg/L 48 h
Glycerin		LC50 51 - 57 mL/L Oncorhynchus mykiss 96 h		EC50 > 500 mg/L 24 h

Environmental Fate

Bifenthrin (82657-04-3)		
Active Ingredient(s)	Type of Test	Result
Bifenthrin	Bioconcentration factor (BCF)	1709
Bifenthrin	Half-life in soil	~85 days
Bifenthrin	log Pow	6.6
Bifenthrin	Mobility in soil	Not expected to reach groundwater
Bifenthrin	Stability in water	Stable to hydrolysis over a wide range of pH values.

Zeta-cypermethrin (F2700) (52315-07-8)		
Active Ingredient(s)	Type of Test	Result
Zeta-cypermethrin	Bioconcentration factor (BCF) Bluefill sunfish (Lepomis macrochirus)	443
	Half-life in soil	2 - 4 weeks
	log Pow	5
	Mobility in soil	Not expected to reach groundwater
	Stability in water	Hydrolysis unstable at pH 9, half life 20-29 days at pH 5 and 7.

Chemical Name	**log Pow**
Naphtha (petroleum), heavy aromatic	2.9 - 6.1
Glycerin	-1.76
2-Methylnaphthalene	3.86

Bioaccumulation Material will likely bioaccumulate in exposed species.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods	Improper disposal of excess pesticide, spray mixture, or rinsate is prohibited. If these wastes cannot be disposed of by use according to label instructions, contact appropriate disposal authorities for guidance.
Contaminated packaging	Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions.

14. TRANSPORT INFORMATION

DOT

Packaging Type	Bulk, Non-Bulk
Proper shipping name	Pyrethroid pesticide, liquid, toxic
UN/ID No	UN3352
Hazard Class	6.1
Packing group	III
Marine pollutant	Zeta-cypermethrin F2700 (Bulk Only)
Description	UN3352, Pyrethroid pesticide, liquid, toxic (Bifenthrin), 6.1, PGIII, Marine Pollutant (Zeta-cypermethrin (F2700))

TDG

The "Marine Pollutant" marking is only applicable when shipped by vessel, and is not applicable when shipped only by road or rail in Canada.

UN/ID No	UN3352
Hazard Class	6.1
Packing group	III
Marine pollutant	Bifenthrin. Zeta-cypermethrin.
Description	UN3352, Pyrethroid pesticide, liquid, toxic (Bifenthrin), 6.1, PGIII, Marine Pollutant (Bifenthrin, Zeta-cypermethrin (F2700))

ICAO/IATA

UN/ID No	UN3352
Hazard Class	6.1
Packing group	III
Marine pollutant	Bifenthrin Zeta-cypermethrin
Description	UN3352, Pyrethroid pesticide, liquid, toxic (Bifenthrin), 6.1, PGIII, Marine Pollutant (Bifenthrin, Zeta-cypermethrin (F2700))

IMDG/IMO

UN/ID No	UN3352
Hazard Class	6.1
Packing group	III
EmS No.	F-A, S-A
Marine pollutant	Bifenthrin Zeta-cypermethrin
Description	UN3352, Pyrethroid pesticide, liquid, toxic (Bifenthrin), 6.1, PGIII, Marine Pollutant (Bifenthrin, Zeta-cypermethrin (F2700))

15. REGULATORY INFORMATION

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Bifenthrin	82657-04-3	9.72	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	yes
Chronic Health Hazard	yes
Fire Hazard	no
Sudden Release of Pressure Hazard	no
Reactive Hazard	no

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

TSCA Inventory (United States of America)

International Regulations

Mexico - Grade Moderate risk, Grade 2

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

WHMIS Hazard Class
D1B Toxic materials
D2B Toxic materials

16. OTHER INFORMATION

Revision Date: 2013-09-30
Reason for revision: (M)SDS sections updated.

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End of Material Safety Data Sheet