MATERIAL SAFETY DATA SHEET
HERO® INSECTICIDE

MSDS #: 6322-A
Revision date: 2014-07-30
Version 0.03

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® INSECTICIDE

Formula code 6322

Active Ingredient(s) Bifenthrin, Zeta-cypermethrin

Synonyms BIFENTHRIN: (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;

ZETA-CYPERMETHRIN: (+/-)-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 Solutions
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 Amber liquid

Physical State Liquid

Odor Hydrocarbon-like

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

Potential Health Effects
Principal Routes of Exposure Eye Contact, Skin Contact, Inhalation, Ingestion

Acute Effects
Eyes May cause slight irritation.
Skin May cause sensitization by skin contact. Irritating to skin.

Inhalation
Ingestion

Toxic by inhalation. May cause drowsiness and dizziness. May cause irritation of respiratory tract. May be harmful if swallowed. Potential for aspiration if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause drowsiness and dizziness.

Chronic Effects

Bifenthrin: Long-term exposure caused neurotoxicity (tremors and impaired gait) in the early exposure in animal studies, but tremors disappeared with continued exposure.

Zeta-cypermethrin: Long-term exposure caused neurotoxicity (body tremors, decreased motor activity), decreased body weight and increased liver weight.

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 %
Zeta-cypermethrin (F2700)	52315-07-8	3.75
Petroleum distillates, solvent dewaxed light paraffinic	64742-56-9	15-25
Petroleum distillates, solvent dewaxed heavy paraffinic	64742-65-0	1-10
Naphtha (petroleum), heavy aromatic	64742-94-5	40-50
Bifenthrin	82657-04-3	11.25
1-Methylnaphthalene	90-12-0	5-10
Naphthalene	91-20-3	5-10
2-Methylnaphthalene	91-57-6	10-20

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 further 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

Suitable Extinguishing Media

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

Hazardous Combustion Products Carbon oxides, Hydrogen chloride, Hydrogen fluoride.

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 Hazards	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. Keep/store only in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
1-Methylnaphthalene 90-12-0	S* TWA: 0.5 ppm			
Naphthalene 91-20-3	S* TWA: 10 ppm	TWA: 10 ppm TWA: 50 mg/m³	IDLH: 250 ppm TWA: 10 ppm TWA: 50 mg/m³ STEL: 15 ppm STEL: 75 mg/m³	Mexico: TWA 10 ppm Mexico: TWA 50 mg/m³ Mexico: STEL 15 ppm Mexico: STEL 75 mg/m³
2-Methylnaphthalene 91-57-6	S* TWA: 0.5 ppm			

Chemical name	British Columbia	Quebec	Ontario TWAEV	Alberta
1-Methylnaphthalene 90-12-0	TWA: 0.5 ppm Skin		TWA: 0.5 ppm Skin	

Naphthalene 91-20-3	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 52 mg/m³ STEL: 15 ppm STEL: 79 mg/m³	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 52 mg/m³ STEL: 15 ppm STEL: 79 mg/m³ Skin
2-Methylnaphthalene 91-57-6	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.

Skin and Body Protection Wear long-sleeved shirt, long pants, socks, shoes, chemical-resistant gloves and headgear.

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 Amber liquid
Color Amber
Physical State Liquid
Odor Hydrocarbon-like
pH 4.2 (1% solution) at 24ºC (75.2ºF)
Boiling Point/Range No information available
Flash point 110 °C / 230 °F
Density 8.26 lbs/gal (990.4 g/L)
Specific gravity 0.9224 @ 20°C (water = 1)
Water solubility 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 fluoride.

Hazardous polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Effects

Eye Contact May cause slight irritation.
Skin Contact Moderately irritating to skin (rabbit)
Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. 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 May cause drownsiness and dizziness based on components. 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 550 mg/kg (rat)
LC50 Inhalation 1.8 mg/l (rat) (4-hr)

Sensitization This product produces skin sensitization (allergic reaction) in laboratory animals, and may produce similar effects in humans. May cause sensitization by skin contact: Guinea pig.

Chronic Effects

Chronic toxicity Bifenthrin: Long-term exposure caused neurotoxicity (tremors and impaired gait) in the early exposure in animal studies, but tremors disappeared with continued exposure.

Zeta-cypermethrin: Long-term exposure caused neurotoxicity (body tremors, decreased motor activity), decreased body weight and increased liver weight.

Carcinogenicity Bifenthrin: No evidence of carcinogenicity from animal studies

Zeta-cypermethrin: Cypermethrin caused an increase in benign lung tumors in mice, but not in rats. 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 in laboratory studies.

Reproductive toxicity Bifenthrin, Zeta-cypermethrin: No toxicity to reproduction in animal studies.

Neurological effects Bifenthrin: Causes clinical signs of neurotoxicity (tremors, impaired gait, excessive salivation) following acute or subchronic exposure. Tremors disappeared with continued exposure.

Zeta-cypermethrin: Causes neurotoxicity (tremors and decreased motor activity) following acute, subchronic or chronic exposure.

Developmental toxicity Bifenthrin, Zeta-cypermethrin: Not teratogenic in animal studies.

Target organ effects Bifenthrin, Zeta-cypermethrin: Central Nervous System (CNS), blood

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Zeta-cypermethrin (F2700) (52315-07-8)				
Active Ingredient(s)	Duration	Species	Value	Units
Zeta-cypermethrin	48 h EC50	Crustacea	0.14	µg/L
	96 h LC50	Fish	0.69	µg/L
	72 h EC50	Algae	>1	mg/l
	21 d NOEC	Crustacea	0.01	µg/L

	21 d NOEC	Fish	0.015	µg/L

Bifenthrin (82657-04-3)				
Active Ingredient(s)	Duration	Species	Value	Units
Bifenthrin	96 h LC50	Fish	0.1	µg/L
	72 h EC50	Algae	0.822	mg/l
	48 h EC50	Crustacea	0.11	µg/L
	21 d NOEC	Fish	0.012	µg/L
	21 d NOEC	Crustacea	0.0013	µg/L

Environmental Fate

Persistence and degradability Bifenthrin: Moderately persistent. Does not readily hydrolyze. Not readily biodegradable.

Zeta-cypermethrin: Non-persistent. Readily hydrolyzed. Not readily biodegradable.

Bioaccumulation Bifenthrin: The substance has a potential for bioconcentration.

Zeta-cypermethrin: The substance does not have a potential for bioconcentration.

Mobility Bifenthrin, Zeta-cypermethrin: Immobile, Not expected to reach groundwater.

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. Do not reuse or refill this container.

14. TRANSPORT INFORMATION

DOT Not regulated for transportation if shipped in Non Bulk packaging. The classification below pertains to the shipment in Bulk packaging.

Packaging Type Bulk
Proper Shipping Name Environmentally hazardous substance, liquid, n.o.s.
UN/ID no UN3082
Hazard class 9
Packing Group III
Reportable Quantity (RQ) Naphthalene: RQ kg= 702.07
Marine Pollutant Zeta-cypermethrin
Description UN3082, Environmentally hazardous substance, liquid, n.o.s. (Zeta-cypermethrin), 9, PGIII, Marine Pollutant

TDG Classification below is only applicable when shipped by vessel and is not applicable when shipped by road or rail only.

UN/ID no UN3082
Proper Shipping Name Environmentally hazardous substance, liquid, n.o.s.
Hazard class 9
Packing Group III
Marine Pollutant Zeta-cypermethrin, Bifenthrin.
Description UN3082, Environmentally hazardous substance, liquid, n.o.s. (Zeta-cypermethrin, Bifenthrin), 9, PGIII, Marine Pollutant

ICAO/IATA

UN/ID no UN3082

Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Hazard class	9
Packing Group	III
Marine Pollutant	Zeta-cypermethrin, Bifenthrin

IMDG/IMO

UN/ID no	UN3082
Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Hazard class	9
Packing Group	III
EmS No.	F-A, S-F
Marine Pollutant	Zeta-cypermethrin, Bifenthrin
Description	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Zeta-cypermethrin, Bifenthrin), 9, PGIII, Marine Pollutant

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	11.25	1.0
Naphthalene	91-20-3	5-10	0.1

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, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Naphthalene	100 lb	

TSCA (United States)

Component	U.S. - TSCA (Toxic Substances Control Act) - Section 4 - Chemical Test Rules (40 CFR 799)	U.S. - TSCA (Toxic Substances Control Act) - Section 5(a)(2) - Chemicals with Significant New Use Rules (SNURs)
Naphthalene 91-20-3 (5-10)	40 CFR 799.5115	

Chemical name	U.S. - TSCA (Toxic Substances Control Act) - Section 8(a) - Chemical-Specific Reporting and Recordkeeping
Naphthalene	PAIR: 08/04/1995

Component	U.S. - TSCA (Toxic Substances Control Act) - Section 8(d) - 716.120(a) - Health and Safety Reporting - List of Substances
Naphthalene 91-20-3 (5-10)	06/01/1987

International Regulations

Mexico - Grade Serious risk, Grade 3

Chemical name	Carcinogen Status	Mexico
Naphthalene		Mexico: TWA 10 ppm Mexico: TWA 50 mg/m^3 Mexico: STEL 15 ppm Mexico: STEL 75 mg/m^3

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: 2014-07-30
Reason for revision: (M)SDS sections updated.

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End of Safety Data Sheet