

MATERIAL SAFETY DATA SHEET

BIFENTHRIN TECHNICAL INSECTICIDE/MITICIDE



MSDS Ref. No.: 82657-04-3

Date Approved: 11/01/2004

Revision No.: 13

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: | BIFENTHRIN TECHNICAL INSECTICIDE/MITICIDE |
| PRODUCT CODE: | 655; 668 |
| ACTIVE INGREDIENT(S): | Bifenthrin |
| CHEMICAL FAMILY: | Pyrethroid Pesticide |
| MOLECULAR FORMULA: | $C_{23}H_{22}ClF_3O_2$ |
| 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 |
| ALTERNATE PRODUCT NAME(S): | Biflex®; Bistar™; Brigade®; Capture®; Talstar® |

MANUFACTURER

FMC CORPORATION
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103
(215) 299 6000 (General Information)

EMERGENCY TELEPHONE NUMBERS

(800) 424-9300 (CHEMTREC - U.S.A. & Canada)
(202) 483-7616 (CHEMTREC - All Other Countries)
(800) 331-3148 (FMC - U.S.A. & Canada)
(716) 735-3765 (FMC - Reverse charges)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Viscous liquid, crystalline solid or waxy solid with a very faint, slightly sweet 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 toxic to fish and aquatic organisms. Keep out of drains and water courses.
- Moderately toxic if swallowed.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either swallowing or coming into contact with the skin. Symptoms of overexposure include bleeding from the nose, tremors and convulsions. Contact with this product may occasionally produce skin sensations such as rashes, 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 | 89 | None | R25-50/53; S1/2-45-29 |

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: Drink 1 or 2 glasses of water and induce vomiting by touching the back of the throat with a finger. Never induce vomiting or give anything by mouth to an unconscious person. Contact a medical doctor.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

NOTES TO MEDICAL DOCTOR: Bifenthrin is moderately toxic if swallowed and has low dermal and inhalation toxicity. It is non-irritating to the skin and practically non-irritating to the eyes. Bifenthrin has high toxicity by the ingestion route of exposure. Gastric lavage using an endotracheal tube may be preferred to vomiting. 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 streams and sewers. **IF LIQUID:** Dike to confine spill and absorb with an absorbent such as clay, sand, or soil. **IF SOLID:** Large spills should be covered to prevent dispersal. For dry material, use a wet sweeping compound or water to prevent the formation of dust. If water is used, prevent runoff or dispersion of excess liquid by diking and absorbing 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 spill area, tools and equipment, wash with a suitable solution of caustic or soda ash, and an appropriate alcohol (i.e., methanol, ethanol or isopropanol). Follow this by washing with a strong soap and water solution. Absorb, as above, any excess liquid and add to the drums of waste already collected. Repeat if necessary. Dispose of drummed waste according to the method outlined in Section 13, "Disposal Considerations".

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. 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

ENGINEERING CONTROLS: General air replacement or dilution ventilation is sufficient for material handling and storage, but local ventilation should be used when removing this product from containers. Ventilate all transport vehicles prior to unloading.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For splash, mist, vapor or dust exposure wear chemical protective goggles or a face shield.

RESPIRATORY: For splash, mist, vapor or dust exposure 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 rubber, neoprene, or PVC. 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 or using tobacco. Shower at the end of the workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

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|-------------------------------------|--|
| ODOR: | Very faint Slightly sweet |
| APPEARANCE: | Viscous liquid, crystalline solid, or waxy solid |
| DENSITY / WEIGHT PER VOLUME: | 10.07 lb/gal. (1210 g/L) |
| FLASH POINT: | 165 °C (329 °F) (PM-CC) |
| MELTING POINT: | 57 - 64 °C (135 - 147 °F) |
| MOLECULAR WEIGHT: | 422.88 (bifenthrin) |
| pH: | 5.4 - 6.0 @ 25 °C |
| SOLUBILITY IN WATER: | Less than 0.1 ppb |
| SPECIFIC GRAVITY: | 1.21 @ 25 °C (water = 1) |
| VAPOR PRESSURE: | 1.81 x 10 ⁻⁷ mm Hg @ 25°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 chloride and hydrogen fluoride. |

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Practically non-irritating (rabbit)

SKIN EFFECTS: Non-irritating (rabbit)

DERMAL LD₅₀: > 2,000 mg/kg (rabbit)

ORAL LD₅₀: 53.4 mg/kg (rat)

INHALATION LC₅₀: 0.8 mg/l (4 h) (rat)

SENSITIZATION: This product produces skin sensitization (allergic reaction) in laboratory animals, and may produce similar effects in humans.

ACUTE EFFECTS FROM OVEREXPOSURE: Bifenthrin is moderately toxic if swallowed and has low dermal and inhalation toxicity. It is non-irritating to the skin and practically non-irritating to the eyes. 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.

CHRONIC EFFECTS FROM OVEREXPOSURE: 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 rodents, 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.

CARCINOGENICITY:

| | |
|---------------|--------------------|
| NTP: | Not listed |
| IARC: | Not listed |
| OSHA: | Not listed |
| OTHER: | (ACGIH) Not listed |

12. ECOLOGICAL INFORMATION

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 (>6.0), 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 = 11,750).

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).

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: | LIQUID: Non-bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, liquid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| 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), UN 3352 |
| PACKAGING TYPE: | SOLID: Non-bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, solid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| UN/NA NUMBER: | UN 3349 |

| | |
|---|--|
| PACKING GROUP: | III |
| LABEL(S): | 6.1 |
| PLACARD(S): | 6.1 |
| MARKING(S): | Pyrethroid pesticide, solid, toxic (bifenthrin), UN3349 |
| PACKAGING TYPE: | LIQUID: Bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, liquid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| PRIMARY HAZARD CLASS / DIVISION: | 6.1 |
| UN/NA NUMBER: | UN 3352 |
| PACKING GROUP: | III |
| MARINE POLLUTANT: | Bifenthrin |
| LABEL(S): | 6.1 |
| PLACARD(S): | 6.1 |
| MARKING(S): | 3352 |
| PACKAGING TYPE: | SOLID: Bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, solid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| PRIMARY HAZARD CLASS / DIVISION: | 6.1 |
| UN/NA NUMBER: | UN 3349 |
| PACKING GROUP: | III |
| MARINE POLLUTANT: | Bifenthrin |
| LABEL(S): | 6.1 |
| PLACARD(S): | 6.1 |
| MARKING(S): | 3349 |

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

| | |
|---|-------------------------------------|
| PACKAGING TYPE: | LIQUID: Non-bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, liquid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| PRIMARY HAZARD CLASS / DIVISION: | 6.1 |
| UN/NA NUMBER: | UN 3352 |
| PACKING GROUP: | III |

| | |
|---|--|
| MARINE POLLUTANT: | Bifenthrin |
| LABEL(S): | 6.1 |
| PLACARD(S): | 6.1 |
| MARKING(S): | Pyrethroid pesticide, liquid, toxic (bifenthrin), UN3352 + Marine Pollutant |
| ADDITIONAL INFORMATION: | EmS Number: F-A, S-A |
| PACKAGING TYPE: | SOLID: Non-bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, solid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| PRIMARY HAZARD CLASS / DIVISION: | 6.1 |
| UN/NA NUMBER: | UN 3349 |
| PACKING GROUP: | III |
| MARINE POLLUTANT: | Bifenthrin |
| LABEL(S): | 6.1 |
| PLACARD(S): | 6.1 |
| MARKING(S): | Pyrethroid pesticide, solid, toxic (bifenthrin), UN3349, Marine Pollutant |
| ADDITIONAL INFORMATION: | EmS Number: F-A, S-A |

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

| | |
|---|-------------------------------------|
| PACKAGING TYPE: | LIQUID: Non-bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, liquid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| PRIMARY HAZARD CLASS / DIVISION: | 6.1 |
| CLASSIFICATION CODE: | T6 |
| UN/NA NUMBER: | UN3352 |
| PACKING GROUP: | III |
| HAZARD IDENTIFICATION NUMBER: | 60 |
| MARINE POLLUTANT: | Bifenthrin |
| LABEL(S): | 6.1 |
| PLACARD(S): | 6.1 |

| | |
|---|------------------------------------|
| MARKING(S): | UN3352 + Marine Pollutant |
| PACKAGING TYPE: | SOLID: Non-bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, solid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| PRIMARY HAZARD CLASS / DIVISION: | 6.1 |
| CLASSIFICATION CODE: | T7 |
| UN/NA NUMBER: | UN3349 |
| PACKING GROUP: | III |
| HAZARD IDENTIFICATION NUMBER: | 60 |
| MARINE POLLUTANT: | Bifenthrin |
| LABEL(S): | 6.1 |
| PLACARD(S): | 6.1 |
| MARKING(S): | UN 3349, Marine Pollutant |

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

| | |
|---|--|
| PACKAGING TYPE: | LIQUID: Non-bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, liquid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| 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: | Marks: Pyrethroid pesticide, liquid, toxic (bifenthrin), UN3352 |
| PACKAGING TYPE: | SOLID: Non-bulk |
| PROPER SHIPPING NAME: | Pyrethroid pesticide, solid, toxic |
| TECHNICAL NAME(S): | Bifenthrin |
| PRIMARY HAZARD CLASS / DIVISION: | 6.1 |

| | |
|---|--|
| UN/NA NUMBER: | UN3349 |
| PACKING GROUP: | III |
| LABEL(S): | 6.1 |
| LIMITED QUANTITY: | Y619 / 10 kg |
| LIMITED QUANTITY: PASSENGER / CARGO: | 619 / 100 kg |
| LIMITED QUANTITY: CARGO: | 619 / 200 kg |
| ERG NUMBER: | 6L |
| ADDITIONAL INFORMATION: | Pyrethroid pesticide, solid, toxic (bifenthrin), UN3349 |

OTHER INFORMATION:

HARMONIZED SYSTEM:

Import to the U.S.A.: 2916.20.5000

Export from the U.S.A.: 2916.20.5000

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:

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) |
| | N | (Dangerous for the environment) |
| EC Risk Phrases: | R25 | (Toxic if swallowed.) |
| | 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.) |
| | S29 | (Do not empty into drains.) |
| | S45 | (In case of accident or if you feel unwell, seek medical advice immediately - show the label where possible.) |

Notes For Preparation:

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

16. OTHER INFORMATION

REVISION SUMMARY:

This MSDS replaces Revision #12, dated November 01, 2004.

Changes in information are as follows:

Section 6 (Accidental Release Measures)

Biflex, Bistar, Brigade, Capture, Talstar and FMC Logo - FMC Trademarks

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