

MATERIAL SAFETY DATA SHEET

DOUBLE THREAT™



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Version: Global

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Revision No: New MSDS

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: DOUBLE THREAT™**PRODUCT CODE:** 6192**ACTIVE INGREDIENT:** * Bifenthrin; ** Spinosad**CHEMICAL FAMILY:** *Pyrethroid Insecticide; **Naturalyte**MOLECULAR FORMULA:** C₂₃H₂₂ClF₃O₂ (bifenthrin); C₄₂H₆₇NO₁₀ (spinosad)**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; ** Spinosyn A: 2-((6-deoxy-2,3,4-tri-O-methyl-alpha-L-mannopyranosyl)oxy)-13-((5-dimethylamino)tetrahydro-6-methyl-2H-pyran-2-yl)oxy)-9-ethyl-2,3,3A,5A,5B,6,9,10,11,12,13,14,16a,16b-tetra-decahydro-14-methyl-1H-as-indaceno(3,2-d)oxacyclododecin-7,15-dione; Spinosyn D: 2-((6-deoxy-2,3,4-tri-O-methyl-alpha-L-mannopyranosyl)oxy)-9-ethyl-2,3,3a,5a,5b,6,9,10,11,12,13,14,16a,16b-tetradecahydro-4-14-eimethyl-1H-as-indaceno(3,2-d)oxacyclododecin-7,15-dione***Information for Bifenthrin ** Information for Spinosad**

MANUFACTURER

FMC CORPORATION
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103 USA

Emergency Telephone Numbers:

Emergency Phone (FMC) 800-331-3148
(U.S.A. & Canada)
Emergency Phone (FMC) 716-735-3765
(Reverse charges)
CHEMTREC (U.S.): (800) 424-9300
(U.S.A. & Canada)
(202) 483-7616 (All other countries)

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS#</u>	<u>Wt.%</u>	<u>PEL/TLV</u>	<u>EC No.</u>	<u>EC Class</u>
Bifenthrin	82657-04-3	25.1	None	None	R25; R50/53
Spinosad		44.2	0.3 mg/m ³ (supplier)	None	None
Spinosyn A	131929-60-7		None	None	None
Spinosyn D	131929-30-0		None	None	None
Aromatic Hydrocarbons	64742-95-6	<21.22	100 ppm (supplier)	650-001-00-0	R65
1,2,4-trimethylbenzene	95-63-6	<12	25 ppm	None	None
Surfactant Blend	0000-00-0	<7	None	None	None
Xylene	1330-20-7	<1.1	100 ppm 150 ppm STEL	601-022-00-9	R11-20/21-38
Ethylbenzene	100-41-4	<0.04	100 ppm 125 ppm STEL	601-023-00-4	R11-20
Cumene	98-82-8	<0.5	50 ppm (skin)	601-024-00-X	R10-37
Propylene Glycol	57-55-6	>1	10.0 mg/m ³ WEEL	None	None
1-butanol	71-36-3	0.6	50 ppm (skin) (ceiling)	603-004-00-6	R10-20

COMMENTS:

Spinosad - mixture of Spinosyn A and Spinosyn D

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS:

- *Amber liquid with an aromatic hydrocarbon odor / ** Off-white to tan liquid suspension with low odor.

- *Moderately combustible. May support combustion if heated above the product's flash point (see Section 5, "Fire Fighting Measures" 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.
- This product, as a mixture, is expected to have moderate oral toxicity.

* Information for Bifenthrin 2 EC; ** Information for Spinosad

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either swallowing or coming into contact with the skin. Symptoms of overexposure to Bifenthrin 2 EC includes tremors, convulsions, incoordination, decreased locomotion and nasal discharge. Contact with bifenthrin may occasionally produce skin sensations such as rashes, numbing, burning or tingling. These skin sensations are reversible and usually subside within 12 hours.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

4. FIRST AID MEASURES

EYES: Immediately flush with water for at least 15 minutes, lifting upper and lower eyelids intermittently. See a medical doctor immediately.

SKIN: Immediately flush with plenty of water while removing contaminated clothing and/or shoes, and thoroughly wash with soap and water. See a medical doctor immediately.

INGESTION: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. 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, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor immediately.

NOTES TO MEDICAL DOCTOR: This product, as a mixture, is expected to have moderate oral, and low dermal and inhalation toxicity. It is expected to be irritating to the eyes and non-irritating to the skin. Aromatic hydrocarbons can produce a severe pneumonitis or fatal pulmonary edema if aspirated. 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

FLASH POINT AND METHOD: 42°C (108°F) (CC) (Bifenthrin 2 EC)

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.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, hydrogen chloride and hydrogen flouride.

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 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

GENERAL PROCEDURES:

Bifenthrin 2 EC and Spinosad:

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.

Bifenthrin 2 EC:

Do not freeze. Do not store below 4°C (40°F). If crystals are observed, warm material to above 15°C (60°F) by room heating only. Do not use external source of heat for warming container. Shake container periodically to redissolve crystals. 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

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 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).

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.

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.

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: * Amber liquid / ** Off-white to tan liquid suspension

SOLUBILITY IN WATER: *Emulsifies; **Dispersible

SPECIFIC GRAVITY: *0.95 @ 20°C (water = 1); **1.09 g/mL

MOLECULAR WEIGHT: 422.88 (bifenthrin)

WEIGHT PER VOLUME: * 7.91 lb/gal (950 g/L); ** 9.1 lb/gal (1090 g/L)

COMMENTS:

* Information for Bifenthrin 2 EC; ** Information for Spinosad

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Excessive heat and fire.

STABILITY:

Bifenthrin 2 EC: Stable

Spinosad:

Thermally stable at typical use temperatures. Some components of this product can decompose at elevated temperatures.

POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

Bifenthrin 2 EC: Minimally irritating

Spinosad: Slightly irritating

SKIN EFFECTS:

Bifenthrin 2 EC / Spinosad: Non-irritating (rabbit)

DERMAL LD₅₀:

Bifenthrin 2 EC: >2000 mg/kg (rabbit)

Spinosad: > 5000 mg/kg (rabbit)

ORAL LD₅₀:

Bifenthrin 2 EC: 262 mg/kg (rat)

Spinosad: > 5000 mg/kg (rat/mice)

INHALATION LC₅₀:

Bifenthrin 2 EC: 1.86 mg/L/4 hour (rat)

SENSITIZATION:

Bifenthrin 2 EC produced skin sensitization (allergic reaction) in laboratory animals and may produce similar symptoms in humans.

ACUTE EFFECTS FROM OVEREXPOSURE:

This product, as a mixture, is expected to have moderate oral, and low dermal and inhalation toxicity. It is expected to be irritating to the eyes and non-irritating the skin.

Signs of toxicity in laboratory animals, with Bifenthrin 2 EC, included tremors, clonic convulsions, ataxia, decreased locomotion, bloody tears and bloody nasal discharge. Experience to date indicates that contact with Bifenthrin 2 EC concentrate may occasionally produce skin sensations such as numbing, burning or tingling. These skin sensations are reversible and usually subside within 12 hours. Bifenthrin does not cause acute delayed neurotoxicity.

A single prolonged dermal exposure to Spinosad is not likely to result in the material being absorbed through the skin in harmful amounts. Swallowing amounts larger than normal handling may cause injury. A single exposure to the concentrate mist is not likely to cause adverse effects.

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 headache, 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. In humans, ingestion of large amounts of propylene glycol has resulted in symptoms of reversible central nervous system depression including stupor, rapid breathing and heartbeat, profuse sweating and seizures.

CHRONIC EFFECTS FROM OVEREXPOSURE:

No data available for the product as a mixture.

No data available for Bifenthrin 2 EC. Information is based on the active ingredient. 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. An overall absence of genotoxicity has been demonstrated in mutagenicity tests with bifenthrin.

In studies with laboratory animals, Spinosad has been shown to cause vacuolation of cells in various tissues and changes in blood and serum biochemistry. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use. In studies with laboratory animals, Spinosad was not carcinogenic, mutagenic or teratogenic. Effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Chronic exposure to aromatic hydrocarbons may cause headaches, dizziness, loss of sensations or feelings, and liver and kidney damage. Inhalation of xylene vapors at high doses has also resulted in an increase incidence of malformations and decreases in fetal weight in laboratory animals. Damage from xylene may be potentiated by alcohol. Disturbances in hearing and balance have been reported in workers exposed to butanol vapors. Repeated overexposure to propylene glycol can produce central nervous system depression, hemolysis and minimal kidney damage. Under the conditions of 2-year inhalation studies, conducted by the National Toxicology Program (NTP), there was clear evidence of carcinogenic activity of ethylbenzene in male rats based on increased incidences of renal tubule neoplasms. The incidences of testicular adenoma were also increased. There was some evidence of carcinogenic activity in female rats based on increased incidences of renal tubule adenomas. There was some evidence of carcinogenic activity in male mice based on increased incidences of alveolar/bronchiolar neoplasm. There was some evidence of carcinogenic activity in female mice based on increased incidences of hepatocellular neoplasms. Studies conducted by the International Agency for Research on Cancer (IARC) showed that there is inadequate evidence in humans for the carcinogenicity of ethylbenzene and that there is sufficient evidence in experimental animals; therefore, the overall evaluation shows that ethylbenzene is possibly carcinogenic to humans (Group 2B).

CARCINOGENICITY:

IARC: Listed (ethylbenzene)

NTP: Listed (ethylbenzene)

OSHA: Not listed

OTHER: Not Listed (ACGIH)

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA:

Bifenthrin 2 EC:

No data available. Information is based on the active ingredient. 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, is not mobile in soil and therefore has little potential for movement into ground water. There is, however some potential for bioconcentration (bioconcentration factor = 11,750).

Spinosad:

No data available. Information is based on the active ingredient(s). Bioconcentration potential is low (BCF <100 or Log Pow <3).

Spinosyn A:

Bioconcentration factor in fish is 19

Photolysis half-life in soil is 8.68 days; the photolysis half-life in pH 7 buffer is 0.96 days

Under aerobic soil conditions the half-life is 9.4 and 17.3 days

Spinosyn D:

Bioconcentration factor in fish is 33

Photolysis half-life in soil is 9.44 days; the photolysis half-life in pH 7 buffer is 0.84 days

ECOTOXICOLOGICAL INFORMATION:**Bifenthrin 2 EC:**

No data available. Information is based on the active ingredient. Bifenthrin is highly toxic to fish and aquatic arthropods and LC50 values range from 0.0012 mg/l to 17.8 mg/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 1800 mg/kg to >2150 mg/kg).

Spinosad:

Material is slightly toxic to aquatic organisms on an acute basis (LC50 / EC50 between 10 and 100 mg/L in most sensitive species).

Acute immobilization EC50 in water flea (*daphnia magna*) is 16.9 mg/L

Acute LC50 in water flea (*Daphnia magna*) is >90.9 mg/L

Acute LC50 in zebra fish (*Brachydanio rerio*) is > 120 mg/L

Acute LC50 in common carp (*Cyprinus Carpio*) is > 100 mg/L

The LC50 in earthworm (*Eisenia foetida*) is > 2000 mg/kg

Growth inhibition EC50 in diatom (*Navicula* sp.) is 0.667 mg/L

Growth inhibition EC50 in green alga (*Selenastrum capricornutum*) is > 100 mg/L

Acute contact LC50 in honeybee (*Apis mellifera*) is 0.12 ug/bee

Acute oral LD50 in honeybee (*Apis mellifera*) is 0.11 ug/bee

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 which 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)

PROPER SHIPPING NAME: Pyrethroid pesticide, liquid, toxic, flammable

TECHNICAL NAME: Bifenthrin

PRIMARY HAZARD CLASS/DIVISION: 6.1

UN/NA NUMBER: 3351

PACKING GROUP: III

REPORTABLE QUANTITY (RQ): None

U.S. SURFACE FREIGHT CLASS: Insecticides, NOI, Poison other than Class A Poison. NMFC Item 102100.

MARINE POLLUTANT #1: bifenthrin (Severe Marine Pollutant)

NAERG: 131

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): 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. 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: (1,2,4-trimethylbenzene) (bifenthrin) (xylene, mixed isomers) (cumene) (ethylbenzene)

**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE
COMPENSATION AND LIABILITY ACT)****CERCLA REGULATORY (40 CFR 302.4):**

1-butanol, < 0.06%, 5,000 lbs.
cumene, < 2.22%, 5,000 lbs.
ethylbenzene, < 0.04%, 1,000 lbs.
xylene, mixed isomers, < 1.10%, 100 lbs.

COMMENTS: Australian Hazard Code : 3XE

U.S. EPA Signal Word : WARNING

16. OTHER INFORMATION**REVISION SUMMARY** New MSDS

Viton - E.I. du Pont de Nemours & Co. Trademark
Spinosad - Product of Dow AgroSciences
Double Threat and FMC Logo - FMC Trademarks

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