

MATERIAL SAFETY DATA SHEET

ANNEX™ 2 EC INSECTICIDE / MITICIDE



MSDS Ref. No: 82657-04-3-57a

Version: Global

Date Approved: 03/18/2004

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: ANNEX™2 EC INSECTICIDE / MITICIDE**PRODUCT CODE:** 777a**ACTIVE INGREDIENT:** Bifenthrin**CHEMICAL FAMILY:** Pyrethroid Pesticide**MOLECULAR FORMULA:** C₂₃H₂₂ClF₃O₂(bifenthrin)**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

MANUFACTURER

TENKOZ, INC.
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(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
Aromatic Hydrocarbons	64742-95-6	22 - 36	100 ppm (supplier)	265-199-0	R22, 45, 65
1,2,4-trimethylbenzene	95-63-6	11 - 19	25 ppm	202-436-9	R10, 20, 36/37/38, 51, 53
Xylene	1330-20-7	1.1 - 2	100 ppm 150 ppm STEL	215-535-7	R10-20/21-38
Surfactant Blend	0000-00-0	<7	None	None	None
Cumene	98-82-8	0.5 - 0.9	50 ppm (skin) 50 ppm	202-704-5	R10-37-51/53-65
Ethylbenzene	100-41-4	0.04 - 0.06	100 ppm 100 ppm 125 ppm	202-849-4	R11, 20
1-butanol	71-36-3	<0.6	50 ppm (skin) (ceiling) 20 ppm (skin) (ceiling)	200-751-6	R10, 22, 37/38, 41, 67

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS:

- Amber liquid with an aromatic hydrocarbon 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.
- Moderate oral toxicity.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either swallowing or coming into contact with the skin. Symptoms of overexposure include 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: Flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

SKIN: Wash with plenty of soap and water.

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, obtain medical attention.

NOTES TO MEDICAL DOCTOR: This product has moderate oral and, low dermal and inhalation toxicity. It is minimally irritating to the eyes and non-irritating to the skin. This product contains light aromatic hydrocarbons that can produce a severe pneumonitis or fatal pulmonary edema 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

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

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: 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 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. 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:Aromatic hydrocarbon

APPEARANCE:Amber liquid

SOLUBILITY IN WATER:Emulsifies

SPECIFIC GRAVITY:0.94 - 0.96 @ 20°C (water = 1)

MOLECULAR WEIGHT:422.88 (bifenthrin)

WEIGHT PER VOLUME:7.8 - 8.0 lb/gal. (940 - 960 g/L)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:Excessive heat and fire.

STABILITY:Stable

POLYMERIZATION:Will not occur

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Minimally irritating (rabbit)

SKIN EFFECTS: Non-irritating (rabbit)

DERMAL LD₅₀: >2000 mg/kg (rabbit)

ORAL LD₅₀: 262 mg/kg (rat)

INHALATION LC₅₀: 1.86 mg/L/4 hr (rat)

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

ACUTE EFFECTS FROM OVEREXPOSURE: This product has moderate oral and, low dermal and inhalation toxicity. It is minimally irritating to the eyes and non-irritating to the skin. Signs of toxicity in laboratory animals included tremors, clonic convulsions, ataxia, decreased locomotion, bloody tears 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. 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 headaches, 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.

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 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. Chronic exposure to aromatic hydrocarbons may cause headaches, dizziness, loss of sensations or feelings (such as numbness), and liver and kidney damage. Inhalation of xylene vapors at high doses has also resulted in an increased 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. 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).

<u>Chemical Name</u>	<u>NTP Status</u>	<u>IARC Status</u>	<u>OSHA Status</u>	<u>Other</u>
Ethylbenzene	Listed	Listed	Not listed	Not listed (ACGIH)

12. ECOLOGICAL INFORMATION

Unless otherwise indicated, the data presented below are for the active ingredient.

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 water fowl 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 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

SPECIAL SHIPPING NOTES:

U.S. DEPARTMENT OF TRANSPORTATION (DOT):

Non-bulk Packages:

Proper Shipping Name: Pyrethroid pesticide, liquid, toxic, flammable

Technical Name(s): bifenthrin, aromatic hydrocarbons

Class or Division: 6.1

Subsidiary Class or Division: 3

ID Number: UN 3351

Packing Group: III

Label(s): 6.1 and 3

Placard(s): 6.1

Mark(s): Pyrethroid pesticide, liquid, toxic, flammable (bifenthrin, aromatic hydrocarbons), UN 3351

ERG No.: 131

Bulk Packages:

Proper Shipping Name: Pyrethroid pesticide, liquid, toxic, flammable

Technical Name(s): bifenthrin, aromatic hydrocarbons

Class or Division: 6.1

Subsidiary Class or Division: 3

ID Number: UN 3351

Packing Group: III

Reportable Quantity (RQ): xylene

Marine Pollutant(s): bifenthrin

Label(s): 6.1 and 3

Placard(s): 6.1

Mark(s): 3351

ERG No.: 131

Notes: Xylene is a Reportable Quantity when in packages containing 9259.26 pounds (1170.6 gallons) or more of this product.

INTERNATIONAL MARITIME DANGEROUS GOODS CODE:

Substance or Article: Pyrethroid pesticide, liquid, toxic, flammable

Technical Name(s): bifenthrin 25.1%, aromatic hydrocarbons

Class or Division: 6.1

Subsidiary Class or Division: 3

ID Number: UN 3351

Packing Group: III

Marine Pollutant(s): bifenthrin

Label(s): 6.1 and 3

Placard(s): 6.1 and 3

Mark(s): Pyrethroid pesticide, liquid, toxic, flammable (bifenthrin 25.1%, aromatic hydrocarbons), UN 3351 and Marine Pollutant

EmS No.: F-E, S-D

Flash Point: 42°C

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

UN Number: UN 3351

Name and Description: Pyrethroid pesticide, liquid, toxic, flammable

Technical Name(s): bifenthrin, aromatic hydrocarbons

Class or Division: 6.1

Classification Code: TF2

Packing Group: III

Hazard Identification Number: 63

Marine Pollutant: bifenthrin

Label(s): 6.1 and 3

Placard(s): 6.1 and 3

Marks: UN 3351 and Marine Pollutant

Road or Rail: ADR

Notes: Packages marked in accordance with the IMDG Code are accepted for shipment.

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

Proper Shipping Name: Pyrethroid pesticide, liquid, toxic, flammable (bifenthrin, aromatic hydrocarbons)

Class or Division: 6.1

UN or ID Number: UN 3351

Packing Group: III

Subsidiary Risk: 3

Packing Instruction

Ltd Qty: Y611 / 2 L

Passenger & Cargo: 611 / 60 L

Cargo Aircraft Only: 618 / 220 L

ERG Code: 6F

HARMONIZED SYSTEM:

Import to the U.S.A.: 3808.10.2500

Export from the U.S.A.: 3808.10.0000

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: (bifenthrin) (1,2,4-trimethylbenzene) (xylene, mixed isomers) (ethylbenzene)

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT):Listed.

<u>Chemical Name</u>	<u>Wt.%</u>	<u>RQ</u>
Xylene	1.1 - 2	100 lbs.
Cumene	0.5 - 0.9	5000 lbs.
Ethylbenzene	0.04 - 0.06	1000 lbs.
1-butanol	<0.6	5000 lbs.

COMMENTS:

Australian Hazard Code : 3XE

U.S. EPA Signal Word : WARNING

16. OTHER INFORMATION

REVISION SUMMARY^{New} MSDS

EU CLASSIFICATIONS:

Bifenthrin technical:

EU Symbols:

T (Toxic); N (Dangerous for the environment)

EU Risk Phrases:

R25 (Toxic by Inhalation)

R50 (Very toxic to aquatic organisms)

R53 (May cause long term adverse effects in the aquatic environment)

EU Safety Phrases:

S1/2 (Keep locked up and out of the reach of children)

S29 (Do not empty into drains)

S45 (In case of accident or if you feel unwell, seek medical advise immediately - show the label where possible)

Aromatic Hydrocarbons:

EU Symbols: T (Toxic), Xn (Harmful)

EU Risk Phrases:

R22 (Harmful if swallowed)

R45 (May cause cancer)

R65 (Harmful, may cause lung damage if swallowed)

EU Safety Phrases:

S53 (Avoid exposure - obtain special instructions before use)

S45 (In case of accident or if you feel unwell, seek medical advise immediately (show the label where possible))

Xylene:

EU Symbols: Xn (Harmful), Xi (Irritant)

EU Risk Phrases:

R10 (Flammable)

R20/21 (Harmful by inhalation or in contact with skin)

R38 (Irritating to the skin)

EU Safety Phrases:

S2 (Keep out of reach of children)

S25 (Avoid contact with eyes)

Ethylbenzene:

EU Symbols: Xn (Harmful), F (Highly flammable)

EU Risk Phrases:

R11 (Highly flammable)

R20 (Harmful by inhalation)

EU Safety Phrases:

S2 (Keep out of reach of children)

S16 (Keep away from sources of ignition - No smoking)

S24/25 (Avoid contact with skin and eyes)

S29 (Do not empty into drains)

Cumene:

EU Symbols: Xn (Harmful), Xi (Irritant), N (Dangerous for the environment), F (Highly flammable)

EU Risk Phrases:

R10 (Flammable)

R65 (Harmful, may cause lung damage if swallowed)

R37 (Irritating to respiratory system)

R51 (Toxic to aquatic organisms)

R53 (May cause long-term adverse effects in the aquatic environment)

EU Safety Phrases:

S2 (Keep out of reach of children)

S24 (Avoid contact with skin)

S37 (Wear suitable gloves)

S61 (Avoid release to the environment. Refer to special instructions (Safety Data Sheet))

S62 (If swallowed, do not induce vomiting: Seek medical advice immediately and show this container or label)

1-butanol:

EU Symbols: Xn (Harmful), Xi (Irritant)

EU Risk Phrases:

R10 (Flammable)

R22 (Harmful if swallowed)

R 37/38 (Irritating to respiratory system and to the skin)

R41 (Risk of serious damage to eyes)

R67 (Vapors may cause drowsiness and dizziness)

EU Safety Phrases:

S2 (Keep out of reach of children)

S7/9 (Keep container tightly closed and in a well-ventilated place)

S13 (Keep away from food, drink and animal feeding stuffs)

S26 (In case of contact with eyes, rinse immediately with plenty of water and seek medical advice)

S37/39 (Wear suitable gloves and eye/face protection)

S46 (If swallowed, seek medical advice immediately and show this container or label)

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