1. PRODUCT AND COMPANY IDENTIFICATION

Product Code 2120901
Product Name BIFENTHRIN 2 EC
Synonyms (2-Methyl[1,1'-Biphenyl]-3-Yl) Methyl 3-(2-Chloro-3,3,3-Trifluoro-1-Propenyl)2,2-Dimethyl-Cyclopropanecarboxylate (cis and trans isomers possible)
Formula C23H22ClF3O2
CAS Number 82657-04-3
EPA Registration Number 2749-556
ChemTrec Emergency Telephone 1-800-424-9300
1-703-527-3887

2. HAZARDS IDENTIFICATION

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Mexico - Grade Not available

Emergency Overview Flammable Liquid. Toxic. May be fatal if swallowed. Toxic by inhalation. Toxic in contact with skin. Irritating to eyes. May cause skin irritation. May cause irritation of respiratory tract. May cause irritation of the mucous membranes. May cause an allergic skin reaction. Marine pollutant. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Appearance Amber, to, Yellow. Physical State Liquid. Odor Aromatic, Hydrocarbons

Preparation Date 09-Mar-2011
Revision Date 20-Apr-2011
Revision Number 2
Potential Health Effects

Principle Routes of Exposure
Eye contact, Skin contact, Inhalation, Ingestion.

Acute Effects

**Eyes**
Irritating to eyes. Avoid contact with eyes.

**Skin**
Toxic in contact with skin. Substance may cause slight skin irritation. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Erythema. Avoid contact with skin.

**Inhalation**
Toxic by inhalation. May cause irritation of the mucous membranes. May cause irritation of respiratory tract. Choking may be caused. Coughing. Inhalation may cause tachypnea, dyspnea, cyanosis, rales, hemoptysis, pulmonary edema, pneumatoceles, lipoid pneumonia, or respiratory arrest may develop following ingestion and aspiration.

**Ingestion**
Toxic if swallowed. May be fatal if swallowed. May cause nausea, vomiting and diarrhea. Abdominal pain.

Additional Acute Effects
Signs of toxicity in laboratory animals included tremors, convulsions, ataxia, decreased locomotion and nasal discharge. Bifenthrin Technical does not cause acute delayed neurotoxicity. Contact with Bifenthrin products may occasionally produce skin sensations, such as rashes, numbing, burning or tingling, which are reversible and usually subside with 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.

Chronic Effects
No data are available for this formulated product. In studies with laboratory animals, Bifenthrin Technical did not cause reproductive toxicity or teratogenicity. Tremors were associated with repeated exposure of laboratory animals to Bifenthrin Technical. 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, loss of sensations or feelings (such as numbness), and liver and kidney damage. Avoid repeated exposure.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions
Not available

Interactions with Other Chemicals
Not available

Potential Environmental Effects
Marine pollutant. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**CAS Number** 82657-04-3  
**Formula** C23H22ClF3O2

#### Hazardous Components

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>Weight %</th>
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</thead>
<tbody>
<tr>
<td>Bifenthrin Technical</td>
<td>82657-04-3</td>
<td>10 - 30</td>
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<tr>
<td>Aromatic solvent</td>
<td>64742-95-6</td>
<td>30 - 60</td>
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</table>

#### Non-hazardous Components

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>C16-C18 and C18 Unsaturated Alkylcarboxylic Acid Methyl Ester</td>
<td>67762-38-3</td>
<td>10 - 30</td>
</tr>
<tr>
<td>Other Ingredients</td>
<td>N/A</td>
<td>10 - 30</td>
</tr>
</tbody>
</table>

### 4. FIRST AID MEASURES

**General Advice**  
Show this safety data sheet to the doctor in attendance.

**Eye Contact**  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician or Poison Control Centre immediately.

**Skin Contact**  
Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. Call a physician or Poison Control Centre immediately.

**Inhalation**  
Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician or Poison Control Centre immediately.

**Ingestion**  
Do not induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Centre immediately.

**Notes to Physician**  
Treat symptomatically

**Protection of First-aiders**  
Remove all sources of ignition. Use personal protective equipment. Avoid contact with skin, eyes and clothing.

### 5. FIRE-FIGHTING MEASURES

**Flammable Properties**  
Flammable liquid. Vapors may cause flash fire or explosion.

**Suitable Extinguishing Media**  
Water spray. Carbon dioxide (CO2). Dry powder. Foam.

**Unsuitable Extinguishing Media**  
Not available
Hazardous Combustion Products
Thermal decomposition or combustion may produce hazardous gases and/or materials.

Explosion Data
- Sensitivity to mechanical impact: Not available
- Sensitivity to static discharge: Not available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapours. Flash back possible over considerable distance.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

NFPA Health 2 Flammability 2 Instability 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Evacuate personnel to safe areas. Use personal protective equipment. Avoid contact with skin, eyes and clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Pay attention to flashback.

Environmental Precautions
Local authorities should be advised if significant spillages cannot be contained. Do not allow material to contaminate ground water system. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. Should not be released into the environment.

Methods for Containment
Not available

Methods for Cleaning up
Evacuate personnel to safe areas. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Clean contaminated surface thoroughly. Prevent product from entering drains. Use spark-proof tools and explosion-proof equipment. Ground and bond containers when transferring material.

Other Information
Not applicable

7. HANDLING AND STORAGE

Handling
Use only in an area equipped with a safety shower. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation. Avoid breathing vapors or mists. Avoid contact with skin, eyes and clothing. Keep away from open flames, hot surfaces and sources of ignition. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Avoid repeated exposure. In case of insufficient ventilation, wear suitable respiratory equipment.
Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep in properly labelled containers. Keep out of the reach of children. Keep at temperatures above 4°C.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Controls
Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection
Tightly fitting safety goggles.

Skin Protection
Protective gloves. Long sleeved clothing.

Respiratory Protection
In case of insufficient ventilation wear suitable respiratory equipment.

General Hygiene Considerations
General industrial hygiene practice. Contaminated work clothing should not be allowed out of the workplace. Avoid contact with skin, eyes and clothing. For environmental protection remove and wash all contaminated protective equipment before re-use. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Amber, to, Yellow

Physical State
Liquid

Odor
Aromatic, Hydrocarbons

pH
Not available

Flash Point
54°C

Autoignition Temperature
Not available

Boiling Point/Range
Not available

Melting Point/Range
Not available

Flammability Limits in Air
Lower Not available       Upper Not available

Vapor Pressure
Not available

Vapor Density
Not available

Specific Gravity
0.94 - 0.96 @ 20°C

Density
7.8 - 8.0 lb/gal (940 - 960 g/L)

Water Solubility
Emulsifiable

Reactivity in Water
Not available

Partition Coefficient (n-octanol/water)
log Pow:>6 (Bifenthrin)

Molecular Weight
422.87 (Bifenthrin)

10. STABILITY AND REACTIVITY

Chemical Stability
Stable under normal conditions.
Conditions to Avoid
Keep away from open flames, hot surfaces and sources of ignition.

Incompatible Materials
Strong oxidizing agents. (Bifenthrin Technical).

Hazardous Decomposition Products
Carbon monoxide, Carbon dioxide (CO2), Hydrogen chloride gas, Hydrogen fluoride.

Possibility of Hazardous Reactions
None under normal processing

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
Product Information

| LD50 Oral: | 262 mg/kg (rat) |
| LD50 Dermal: | > 2,000 mg/kg (rabbit) |
| LC50 Inhalation: | 1.86mg/L 4H (rat) |

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bifenthrin Technical</td>
<td>54.5 mg/kg Oral LD50 Rat</td>
<td>&gt; 2 g/kg Dermal LD50 Rabbit</td>
<td></td>
</tr>
<tr>
<td>Aromatic solvent</td>
<td>8400 mg/kg Oral LD50 Rat</td>
<td>&gt; 2000 mg/kg Dermal LD50 Rabbit</td>
<td>= 3400 ppm Inhalation LC50 Rat 4 h</td>
</tr>
<tr>
<td>C16-C18 and C18 Unsaturated Alkylcarboxylic Acid Methyl Ester</td>
<td>&gt; 2000 mg/kg Oral LD50 Rat</td>
<td></td>
<td>&gt; 5.2 mg/L Inhalation LC50 Rat 4 h</td>
</tr>
</tbody>
</table>

Chronic Toxicity

Carcinogenicity
There are no known carcinogenic chemicals in this product

Irritation
Not available

Corrosivity
Not available

Sensitization
May cause sensitization of susceptible persons by skin contact.

Neurological Effects
Not available

Mutagenic Effects
Not available

Reproductive Effects
Not available

Developmental Effects
Not available

Target Organ Effects
Not available
12. ECOLOGICAL INFORMATION

Ecotoxicity
Marine pollutant. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Bifenthrin Technical
Water Flea Data
48 Hr EC50 Daphnia magna: 6.14 mg/L

Aromatic solvent
Water Flea Data
48 Hr EC50 water flea: 0.0015 mg/L

Persistence / Degradability Not available
Bioaccumulation / Accumulation Not available
Mobility in Soil Not available

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method Contact waste disposal services. Dispose of in accordance with local regulations.
Contaminated Packaging Dispose of in accordance with local regulations. Empty containers should be taken for local recycling, recovery or waste disposal.
US EPA Waste Number Not available

14. TRANSPORT INFORMATION

DOT
Proper Shipping Name Pyrethroid pesticide, liquid, toxic, flammable
Hazard Class 6.1
Subsidiary Class 3
UN-No UN3351
Packing Group III
Marine Pollutant This product contains a chemical which is listed as a marine pollutant according to DOT.
Description UN3351, Pyrethroid pesticide, liquid, toxic, flammable, (Contains Bifenthrin 25.1%, Xylene) ,6.1,(3),PG III, Marine Pollutant

TDG
Proper Shipping Name Pyrethroid pesticide, liquid, toxic, flammable
Hazard Class 6.1
Subsidiary Class 3
This product contains a chemical which is listed as a marine pollutant according to TDG.

**Description**

UN3351, PYRETHROID PESTICIDE, LIQUID, TOXIC, FLAMMABLE, (Contains Bifenthrin 25.1%, Xylene), 6.1, (3), PG III, Marine Pollutant

**MEX**

- **Proper Shipping Name**: Pyrethroid pesticide, liquid, toxic, flammable
- **Hazard Class**: 6.1
- **Subsidiary Class**: 3
- **UN-No**: UN3351
- **Packing Group**: III
- **Description**: UN3351 Pyrethroid pesticide, liquid, toxic, flammable, (Contains Bifenthrin 25.1%, Xylene), 6.1, (3), PG III, Marine Pollutant

**ICAO**

- **UN-No**: UN3351
- **Proper Shipping Name**: Pyrethroid pesticide, liquid, toxic, flammable*
- **Hazard Class**: 6.1
- **Subsidiary Class**: 3
- **Packing Group**: III
- **Description**: UN3351 Pyrethroid pesticide, liquid, toxic, flammable*, (Contains Bifenthrin 25.1%, Xylene), 6.1, (3), PG III, Marine Pollutant

**IATA**

- **UN-No**: UN3351
- **Proper Shipping Name**: Pyrethroid pesticide, liquid, toxic, flammable*
- **Hazard Class**: 6.1
- **Subsidiary Class**: 3
- **Packing Group**: III
- **ERG Code**: 6F
- **Description**: UN3351 Pyrethroid pesticide, liquid, toxic, flammable*, (Contains Bifenthrin 25.1%, Xylene), 6.1, (3), PG III, Marine Pollutant

**IMDG/IMO**

- **Proper Shipping Name**: Pyrethroid pesticide, liquid, toxic, flammable
- **Hazard Class**: 6.1
- **Subsidiary Class**: 3
- **UN-No**: UN3351
- **Packing Group**: III
- **EmS No.**: F-E, S-D
- **Marine Pollutant**: This product contains a chemical which is listed as a marine pollutant according to IMDG/IMO
- **Description**: UN3351, Pyrethroid pesticide, liquid, toxic, flammable, (Contains Bifenthrin 25.1%, Xylene), 6.1, (3), PG III, Marine Pollutant

**RID**

- **Proper Shipping Name**: Pyrethroid pesticide, liquid, toxic, flammable
- **Hazard Class**: 6.1
- **UN-No**: UN3351
- **Packing Group**: III
Classification Code | TF2
---|---
Description | UN3351 Pyrethroid pesticide, liquid, toxic, flammable, (Contains Bifenthrin 25.1%, Xylene), 6.1, (3), PG III, RID, Marine Pollutant
ADR/RID-Labels | 6.1 + 3

ADR
Proper Shipping Name | Pyrethroid pesticide, liquid, toxic, flammable
Hazard Class | 6.1
UN-No | UN3351
Packing Group | III
Classification Code | TF2
Description | UN3351 Pyrethroid pesticide, liquid, toxic, flammable, (Contains Bifenthrin 25.1%, Xylene), 6.1, (3), PG III, ADR, Marine Pollutant
ADR/RID-Labels | 6.1 + 3

ADN
Proper Shipping Name | Pyrethroid pesticide, liquid, toxic, flammable
Hazard Class | 6.1
UN-No | UN3351
Packing Group | III
Classification Code | TF2
Special Provisions | 61, 802
Description | UN3351 Pyrethroid pesticide, liquid, toxic, flammable, (Contains Bifenthrin 25.1%, Xylene), 6.1, (3), PG III, Marine Pollutant
Hazard Labels | 6.1 + 3
Limited Quantity | LQ7
Ventilation | VE01, VE02
Equipment Requirements | PP, EP, EX, TOX, A

15. REGULATORY INFORMATION

International Inventories

<table>
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<tr>
<th>Country</th>
<th>Chemical Name</th>
<th>U.S.A. (TSCA)</th>
<th>Canada (DSL)</th>
<th>EU (EINECS)</th>
<th>EU (ELINCS)</th>
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<tbody>
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<td>Philippines (PICCS)</td>
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</tr>
</tbody>
</table>
This material as a whole is exempt from the TSCA Inventory // FIFRA Regulated Pesticide

USA
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
Bifenthrin Technical (CAS #: 82657-04-3)

SARA 311/312 Hazardous Categorization

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Acute Health Hazard</td>
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<td></td>
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<tr>
<td>Chronic Health Hazard</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Fire Hazard</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Sudden Release of Pressure Hazard</td>
<td>No</td>
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<tr>
<td>Reactive Hazard</td>
<td>No</td>
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</table>

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contain any HAPs.

State Regulations
California Proposition 65
This product does not contain any Proposition 65 chemicals.

State Right-to-Know

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
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<tbody>
<tr>
<td>Bifenthrin Technical</td>
<td>sn 3194</td>
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</table>

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
Not determined
16. OTHER INFORMATION

Prepared By: Environmental Health and Safety, Regulatory Affairs
Preparation Date: 09-Mar-2011
Revision Date: 20-Apr-2011
Revision Summary: Not available

Disclaimer:
The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS