



SHREEJI PESTICIDES PVT. LTD
(A SUBSIDIARY OF WILLOWOOD CHEMICALS PVT. LTD)

Material safety data sheet BIFENTHRIN 10%EC

1. IDENTIFICATION OF COMPANY & PRODUCT

Product Name : BIFENTHRIN 10% EC INSECTICIDE
Chemical Name : 2-Methyl-3-phenylphenyl methyl (1S, 3S)-3-[(Z)-2-chloro-3, 3, 3-trifluoroprop-1-enyl] - 2, 2-dimethylcyclopropane-1-carboxylate
Users : Agricultural insecticide for use as described on the product label.
Molecular Formula : C₂₃H₂₂ClF₃O₂

Manufacturer : Shreeji Pesticides Pvt. Ltd.
Address : Plot No. 69/P, Village - Manjusar, Taluka - Savli,
Dist. Vadodara - 391775 Gujarat, India
Tele Fax Number : 91 2667 264701

2. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS	CAS No	Concentration ,%	TWA (mg/m ³)	STEL (mg/m ³)
Bifenthrin	82657-04-3	100g/L	not set	not set
Liquid hydrocarbon	64742-95-6	760g/L	not set	not set
Other non-hazardous ingredients	-	to 100%	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other nonhazardous ingredients are also possible.

The TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and

3. HEALTH HAZARDS IDENTIFICATION

Statement of Hazardous Nature: This product is classified as: Hazardous according to the criteria of NOHSC Australia. Not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases : R22 Harmful if swallowed.



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Safety Phrases : R65 Harmful: May cause lung damage if swallowed
: S2 Keep out of reach of children.
S20 When using, do not eat or drink.
S46 If swallowed, contact a doctor or Poisons Information Centre immediately and show this MSDS or label
S24/25 Avoid contact with skin and eyes.
S36/37 Wear suitable protective clothing and gloves.

4. FIRST AID MEASURES

Emergency Overview

Physical Description &

Colour : Pale brown liquid.

Odour : Characteristic hydrocarbon odour.

General Information : You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this MSDS with you when you call

Major Health Hazards: Bifenthrin is harmful to mammals when ingested. Large doses may cause incoordination, tremor, salivation, vomiting, diarrhea, and irritability to sound and touch. LD50, for Bifenthrin is about 54 mg/kg in female rats and 70 mg/kg in male rats. The LD50 for rabbits whose skin is exposed to Bifenthrin is greater than 2,000 mg/kg. Bifenthrin does not sensitize the skin of guinea pigs. Although it does not cause inflammation or irritation on human skin, it can cause a tingling sensation which lasts about 12 hours. It is virtually non-irritating to rabbit eyes. This product is harmful if swallowed, if aspirated, may cause lung damage.

Inhalation : No first aid measures normally required. However, if inhalation has occurred, and irritation has developed, remove to fresh air and observe until recovered. If irritation becomes painful or persists more than about 30 minutes, seek medical advice.

Skin Contact : Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 5 minutes or until chemical is removed.

Eye Contact : Immediately flush the contaminated eye(s) with lukewarm, gently flowing water



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for 5 minutes or until the product is removed, while holding the eyelid(s) open. Obtain medical advice immediately if irritation occurs.

Ingestion : If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre, or call a doctor.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards : This product is classified as a C1 combustible product. There is a slight risk of an explosion from this product if commercial quantities are involved in a fire. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids. Vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flash back considerable distances.

Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media

: Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog. Water fog or fine spray is the preferred medium for large fires. Ensure that no spillage enters drains or water courses.

Fire Fighting : If a significant quantity of this product is involved in a fire, call the fire brigade.

Flash point : 63-70°C (estimated)

6. ACCIDENTAL RELEASE MEASURES

Spills and Disposal : Wear appropriate protective clothing. Exclude non-essential people from the area. Contain spill and absorb with inert material such as soil, sand or absorbent granules and place in a sealable waste container. Dispose of waste safely in an approved landfill.

Protective Clothing : For appropriate personal protective equipment see section 8.



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Environmental Precaution : Prevent from entering drains, waterways or sewers. If spill does enter waterways contact local authority.

7. HANDLING AND STORAGE

Handling : Keep exposure to this product to a minimum, and minimize the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimize risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage : This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Check packaging - there may be further storage instructions on the label.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment : **AS/NZS 1715,**
Protective Gloves : **AS 2161,**
Industrial Clothing : **AS2919,**
Industrial Eye Protection : **AS1336 and AS/NZS 1337,**
Occupational Protective Footwear : **AS/NZS2210.**

Exposure Limits : Exposure limits have not been established by NOHSC for any of the significant ingredients in this product.

The ADI for Bifenthrin is set at 0.01mg/kg/day. The corresponding NOEL is set at 1mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, Dec 2004.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Ventilation : No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that vapors and mists are minimized.



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- Eye Protection** : Eye protection such as protective glasses or goggles is recommended when product is being used.
- Skin Protection** : Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.
- Protective Material Types:** We suggest that protective clothing be made from the following: rubber, PVC.
- Respirator** : Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above. Otherwise, not normally necessary. Safety deluge showers should, if practical, be provided near to where this product is being used. Safety deluge showers should, if practical, be provided near to where this product is being used.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical Description & colour** : Pale brown liquid.
- Odour** : Characteristic hydrocarbon odour.
- Boiling Point** : Not available.
- Freezing/Melting Point** : No specific data. Liquid at normal temperatures.
- Volatiles** : No specific data. Expected to be low at 100°C.
- Vapour Pressure** : No data.
- Vapour Density** : No data.
- Specific Gravity** : 0.90-0.95
- Water Solubility** : Emulsifiable.
- pH** : No data.
- Volatility** : No data.
- Odour Threshold** : No data.
- Evaporation Rate** : No data.
- Coeff Oil/water Distribution** : No data
- Auto ignition temp** : No data.

10. STABILITY AND REACTIVITY

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

Conditions to Avoid: Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight

Incompatibilities: Strong acids, strong bases, strong oxidizing agents.



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Fire Decomposition: Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Water. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerization: This product will not undergo polymerization reactions.

11. TOXICOLOGICAL INFORMATION

Inhalation:

Short Term Exposure: Significant inhalation exposure is considered to be unlikely. Available data indicates that this product is not harmful. However product may be mildly irritating, although unlikely to cause anything more than mild transient discomfort.

Skin Contact

Short Term Exposure: Product may be irritating, but is unlikely to cause anything more than mild transient discomfort.

Eye Contact

Short Term Exposure: Exposure via eyes is considered to be unlikely. This product is believed to be mildly irritating, to eyes, but is unlikely to cause anything more than mild transient discomfort.

Ingestion

Short Term Exposure: Significant oral exposure is considered to be unlikely. Because of the low viscosity of this product, it may directly enter the lungs if swallowed, or if subsequently vomited. Once in the lungs, it is very difficult to remove and can cause severe injury or death. This product is unlikely to cause any irritation problems in the short or long term.

Carcinogen Status

NOHSC: No significant ingredient is classified as carcinogenic by NOHSC.

NTP: No significant ingredient is classified as carcinogenic by NTP.

IARC: No significant ingredient is classified as carcinogenic by IARC.

Toxicity: Bifenthrin is harmful to mammals when ingested. Large doses may cause in coordination, tremor, salivation, vomiting, diarrhea, and irritability to sound and touch. LD50, for Bifenthrin is about 54 mg/kg in female rats and 70 mg/kg in male rats. The LD50 for rabbits whose skin is exposed to Bifenthrin is greater than 2,000 mg/kg. Bifenthrin does not sensitize the skin of guinea pigs. Although it does not cause inflammation or irritation on human skin, it can cause a tingling sensation which lasts about 12 hours. It is virtually non-irritating to rabbit eyes.

Chronic Toxicity: Damage to kidneys and liver may occur from the hydrocarbon solvents in the prolonged over exposure.

Teratogenicity Effects: Bifenthrin does not demonstrate any teratogenic effects at the highest levels tested (100 ppm, approximately 5.5 mg/kg/day) in a two-generational study in rats.



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Reproductive Effects: The dose at which no toxic effect of Bifenthrin is observed on the mother (maternal toxicity NOEL) is 1 mg/kg/day for rats and 2.67 mg/kg/day for rabbits. At higher doses, test animals had tremors. The dose at which no toxic effect is observed on development (developmental toxicity NOEL) is 1 mg/kg/day for rats and is greater than 8 mg/kg/day for rabbits.

Mutagenic Effects: Evidence of mutagenic effects from exposure to Bifenthrin are inconclusive. Studies of mouse white blood cells were positive for gene mutation. However, other tests of bifenthrin's mutagenic effects, including the Ames test and studies in live rat bone marrow cells, were negative.

Carcinogenic Effects: There was no evidence of cancer in a 2-year study of rats who ate as much as 10 mg/kg/day of Bifenthrin. However, an 87 week feeding study of mice with doses of 7, 29, 71, and 86 mg/kg showed a significantly higher, dose related trend of increased tumour incidence in the male urinary bladder. The incidence was significantly increased at 86 mg/kg/day. Also, females had higher incidences of lung cancer than the controls at doses of 7 mg/kg and higher. The EPA has classified Bifenthrin as a class C carcinogen, a possible human carcinogen.

Organ Toxicity: Pyrethroid are poisons that affect the electrical impulses in nerves, over-stimulating nerve cells causing tremors and eventually causing paralysis.

Fate in Humans and Animals: Bifenthrin is absorbed through intact skin when applied topically. It undergoes similar modes of breakdown within animal systems as other pyrethroid insecticides. In mammals, Bifenthrin is rapidly broken down and promptly excreted. Rats treated with 4 to 5 mg/kg, excreted 70 % in the urine and 20% in the feces within 7 days. After 7 days, the remaining Bifenthrin was found accumulated in tissues with high fat content such as the skin and fat in males and females and the ovaries of females. Bifenthrin is less toxic to warm-blooded animals, such as mammals, than to cold-blooded animals.

Classification of Hazardous Ingredients: Bifenthrin $\geq 3\%$ Conc < 25%: Xn; R22

12. ECOLOGICAL INFORMATION

Effects on Birds: Bifenthrin is moderately toxic to many species of birds. The dietary concentration (8 day) at which half of the test animals die, the LC50, is 1,280 ppm for mallard ducks and 4,450 ppm for bobwhite quail. The acute oral LD50 is 1,800 mg/kg for bobwhite quail and 2,150 mg/kg for mallard ducks. There is concern about possible bioaccumulation in birds.

Effects on Aquatic Organisms: Bifenthrin is very highly toxic to fish, crustaceans and aquatic animals. The LC50 after a 96-hour exposure is 0.00015 mg/l for rainbow trout, 0.00035 mg/l for bluegill, and 0.0016 mg/l for Daphnia. Because of its low water solubility and high affinity for soil, Bifenthrin is not likely to be found in aquatic systems. **Effects on Other Animals (Nontarget species):** Bifenthrin is toxic to bees.



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Environmental Fate

Breakdown of Chemical in Soil & Groundwater: Bifenthrin does not move in soils with large amounts of organic matter, clay and silt. It also has a low mobility in sandy soils that are low in organic matter. Bifenthrin is relatively insoluble in water, so there are no concerns about groundwater contamination through leaching. It's half-life in soil, the amount of time it takes to degrade to half of its original concentration, is 7 days to 8 months depending on the soil type and the amount of air in the soil.

Breakdown of Chemical in Vegetation: Bifenthrin is not absorbed by plant foliage, nor does it translocate in the plant.

13. DISPOSAL CONSIDERATIONS

Product Disposal: For the disposal of unwanted / unusable chemicals, seek advice from suppliers, local government, your local Waste Management Authority and consult

Container Disposal: Where possible, used containers should be recycled after triple rinsing. Check with local suppliers and or Drum. Otherwise, bury at an authorized landfill. Before disposing of unwanted containers or used packaging on a property, ensure that all appropriate regulations, both Local and State Government, are observed. Significant penalties may apply.

14. TRANSPORT INFORMATION

ADG Code:	3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
UN Number:	3082
SUSDP Classification:	S6
ADG Classification:	Class 9 (ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.)
Hazchem Code:	2X
Special Provisions:	SP179, SP274
Dangerous Goods Class:	Class 9, Miscellaneous Dangerous Goods.
Packaging Group:	III
Packaging Method:	3.8.9



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15. REGULATORY INFORMATION

AICS: All of the significant ingredients in this formulation are to be found in the public AICS Database. The following ingredients: Bifenthrin, liquid hydrocarbon are mentioned in the SUSDP.

16. OTHER INFORMATION

This MSDS contains only safety-related information. For other data see product literature. Please read all labels carefully before using product. This MSDS is prepared in accord with the ASCC document "National Code of Practice for the Preparation of Material Safety Data Sheets" 2nd Edition [NOHSC: 2011(2003)]

