



MATERIAL SAFETY DATA SHEET

BIFLEX[®] TC

ASTRA INDUSTRIAL COMPLEX CO., LTD. (ASTRACHEM)
P.O. Box 30447, AL-KHOBAR 31952
KINGDOM SAUDI ARABIA

1. PRODUCT IDENTIFICATION

Product Name: **BIFLEX[®] TC**
Chemical Class: Pyrethroid Insecticide
Active ingredient: Bifenthrin
Molecular Formula $C_{23}H_{22}ClF_3O_2$

Uses: **BIFLEX[®] TC** is a termiticidal concentrate insecticide used in public health for the termites control before and after constructions.

Producer: **Astra Industrial Complex Co., Ltd.**
P.O. Box 30447, Al-Khobar 31952
Kingdom of Saudi Arabia
Emergency Tel # (+966) 3 8121 406

2. COMPOSITION / INFORMATION ON INGREDIENTS

Active Substance	Chemical structure
<p>Bifenthrin Technical CAS No. 82657-04-3 Chemical Name: 2-methylbiphenyl-3-ylmethyl (Z)-(1RS,3RS)-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylate</p>	

Ingredient Name	CAS#	OSHA-PEL	ACGIH-TLV	Other
Bifenthrin (25.1%)	82657-04-3	None	None	None
Xylene (6.8%)*	1330-20-7	100 ppm	100 ppm	150 ppm STEL
1,2,4-Trimethylbenzene (25%)*	95-63-6	25 ppm	25 ppm	None
Ethylbenzene (1.4%)*	100-41-4	100 ppm	100 ppm	125 ppm STEL
Mineral Oil	8012-95-1	5.0 mg/m ³	5.0 mg/m ³	None

MSDS: **BIFLEX[®] TC**



3. HAZARD IDENTIFICATION

Emergency Overview

Immediate Concerns: 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

Primary Routes of Entry:

Acute and chronic effects from overexposure may result from inhalation, ingestion, or absorption through the skin.

Acute Effects from Overexposure:

Data available on human exposure indicates that contact with bifenthrin may produce skin sensations (feelings of numbing, burning or tingling), which usually subside within 12 hours. Large doses ingested or inhaled by laboratory animals produced signs of toxicity which included clonic convulsions, tremors, loss of muscle control, neurotoxicity even though its principal mode of action is on the mammalian nervous system. Solvent-refined light paraffinic distillate, another ingredient, can cause temporary stinging pain when in contact with the eye. This formulation also contains mixed aromatic hydrocarbons, including xylene. Inhalation of aromatic hydrocarbon vapors may cause central nervous system depression, dizziness, disturbances in vision and respiratory irritation. Contact with eyes and skin may be resulting in pulmonary edema which is fatal.

Chronic Effects from Overexposure:

In studies with laboratory animals, bifenthrin did not cause reproductive toxicity or teratogenicity. The effect associated with repeated exposure of dogs, rats, rabbits and mice to bifenthrin was tremors. 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 results from a battery of genotoxicity studies indicate that bifenthrin is not considered to be genotoxic. Moderate irritation results from prolonged or repeated contact with solvent-refined paraffinic distillate to the skin. Overexposure to aromatic hydrocarbons in this formulation, including xylene, may cause central nervous system effects (including headaches, dizziness, loss of feelings and sensations) and liver and kidney damage. Some reversible hematopoietic depression has been reported in laboratory animals. Damage from xylene may be potentiated by alcohol.

Medical Conditions Aggravated by Exposure:

Pre-existing liver, kidney and nervous disorders.
Carcinogenicity: IRAC: No, NTP: No, OSHA: No

4. FIRST AID MEASURES

Eye:

Flush eyes with for at least 15 minutes. Lift the upper and lower eyelids intermittently. See an ophthalmologist.

Skin:

Remove contaminated clothing and wash with soap and water. If irritation persists, see a physician.

Ingestion:

Do not induce vomiting or give anything by mouth to an unconscious person. Contact a medical doctor.

Inhalation:

Remove victim to fresh air. If not breathing administer artificial respiration. Avoid unprotected mouth to mouth resuscitation. GET MEDICAL ATTENTION.

Note to Physician:

Removal of exposure and symptomatic and supportive treatment is recommended. gastric lavage with an endotracheal tube in place should be considered as aromatic hydrocarbons in this formulation may produce a fatal pneumonities if aspirated.



5. FIRE FIGHTING MEASURES

Fire and Explosion:

Flash point and Method 42.2 C (108 F)(CC)

Extinguishing Media:

Foam, CO₂ or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

Degree of Fire/Explosion Hazard:

Moderately combustible. When heated above the flash point this material release flammable vapors which, when mixed with air, can burn or be explosive. Sealed, overheated containers may present an explosion hazard

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. Try to keep containers cool with soft stream water fog.

Hazardous Decomposition Products:

Carbon monoxide, carbon dioxide, hydrogen chloride and hydrogen fluoride.

Hazardous Polymerization: Will not occur

Conditions to Avoid (Incompatibility)

Excessive heat ,and fire and oxides. Thermal decomposition and burning may produce toxic by-products.

6. ACCIDENTAL RELEASE MEASURES

Steps to be taken if material is released or spilled:

Isolate and 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.



Open dumping or burning of this material or its packaging is prohibited. An acceptable method of disposal is to burn in an incinerator in accordance with all local, state and federal environmental laws, rules, standards and regulations. Because acceptable methods of disposal may vary by location, and because regulatory requirements may change, the appropriate regulatory agencies should be contacted prior to disposal. Steel containers which held these materials may be cleaned by being triple-rinsed, and recycled with the rinsate being incinerated. Do not cut or weld metal containers. Vapors that form inside may create an explosion hazard

To clean and neutralize spill area, tools and equipment, wash with suitable solution of caustic or soda ash, and as 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, openflame 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

Personal protection recommendations for mixing or applying this product are prescribed on the product label. Those directions should be followed. Information stated below provides useful, additional guidance.

Ventilation:

Use local exhaust at all process locations to control employee exposure. Store in a well-ventilated area. Thoroughly ventilate all transport vehicles prior to unloading.



Work Clothing:

Depending upon concentrations encountered, wear long-sleeved uniform or coveralls and head covering. For larger exposures as in the case of spills, wear full body cover barrier suit such as a rubber rain suit. A safety shower should be located nearby. Launder all clothing before reuse.

Eye Protection:

For splash, vapor or mist exposure, wear chemical protective goggles or full-face shield. Emergency eyewash fountain should be located nearby.

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 vapor or mist 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 rubber, neoprene, or PVC. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.



9. PHYSICAL AND CHEMICAL PROPERTIES

Assay	"Bifenthrin" 25.1 %w/w (240 g ± 10 g / L)
Appearance	Light brown Liquid
Odour	Aromatic hydrocarbon
Flash Point	42.2°C (108°F)(CC)
pH	Not applicable
Vapor pressure	Not available
Melting Point	Not applicable
Solubility in Water	Emulsifiers
Specific Gravity	Not applicable

10. STABILITY AND REACTIVITY

Stability:	Stable
Condition to avoid:	Excessive heat and fire.
Hazardous polymerization:	will not occur

11. TOXICOLOGICAL INFORMATION

Toxicology Data:

Technical Bifenthrin:

Acute Oral LD ₅₀ (rat)	53.4 mg/kg
Dermal LD ₅₀ (rat)	>2000 mg/Kg (rabbit)

Acute effects from overexposure:

Bifenthrin is moderately toxic if swallowed and has low dermal 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 doses 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:

IARC: Not listed
NTP: 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 p_{ow} (>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 LC_{50} values range from 0.0038 to 17.8 $\mu\text{g/L}$. 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 (LD_{50} Values range from 1,800 mg/Kg to >2,150 mg/kg)

13. DISPOSAL CONSIDERATION

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

DOT: Insecticide, NOI other than Poison. NMFC Item 102120. Biflex[®]TC
UN. Flammable, Liquid n.o.s.(containing xylene), Class 3.3, UN 1993,
Packaging Group III, ERG Guide 27. Insecticides, NOI. Biflex[™]TC.

Proper Shipping name: Pyrethroid pesticide, liquid, toxic, flammable, flash point $\geq 23^{\circ}\text{C}$ (Bifenthrin)

UN. No: UN 3351

Hazard Class: 6.1

Classification Code: TF2

Packing group: III

Subsidiary Risks: 6.1 +3

Special provisions: 61

Limited quantities: LQ19

Packaging: Packing instructions P001 IBC03 R001

Special packing provisions -

Mixed Packaging Provisions MP15

Instructions T7

UN Portable tanks: Special Provisions TP2 TP28

Tank Code L4BH

ADR Tank: Special Provision TU15 TE1 TE15 TE19

Vehicle for tank carriage FL

Transport Category 2

Special provision carriage: Packages -

Bulk -

Loading, unloading & Handling CV13 CV28

Operation S2 S9

Hazard Identification **63**

Marine Pollutant #1 : bifenthrin (Severe Marine Pollutant)

Reportable Quantity(RQ): NONE

NERG: 151



15. REGULATORY INFORMATION.

Section 302 Extremely Hazardous Substances (40 CFR 355); 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. 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 regulatory (40 CFR 302.4): Not listed

Comments : Australian Hazard Code : 3 XE

U.S.EPA Signal Word: **Warning**

16. OTHER INFORMATION

Buyer assumes all responsibility for safety and use not in accordance with the product label instructions.