



MATERIAL SAFETY DATA SHEET

TALSTAR® 100EC

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

1. PRODUCT IDENTIFICATION

Product Name: TALSTAR® 100EC

Chemical Class: Pyrethroid

Use: Talstar 100EC is an emulsifiable concentrate Insecticide / Acaricide formulation containing 100 g / L of the active ingredient **Bifenthrin**. It is effective against a broad range of foliar pests, including *Coleoptera*, *Diptera*, *Heteroptera*, *Homoptera*, *Lepidoptera* and *Orthoptera*; it also controls some species of *Acarina*. Crops include vegetables, cereals, citrus, cotton, fruit, grapes, and ornamentals.

Producer: Astra Industrial Complex Co., Ltd.
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2. COMPOSITION / INFORMATION ON INGREDIENTS

Substance	Risk Phrases	Proportions (% w/w)	Chemical structure
Bifenthrin CAS No. 82657-04-3 Chemical Name: 2-methylbiphenyl-3-ylmethyl (Z)-(1 <i>RS</i> ,3 <i>RS</i>)-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylate (IUPAC)	R25 R50/53.	11.86 (100 ± 6 g/L)	
Blend of ionic and non ionic emulsifiers	R36	8.22	
Organic solvents	R65	79.92	

Product Description: Synthetic pyrethroid insecticide and miticide. Light brown liquid with a mild solvent odour.



3. HAZARD IDENTIFICATION

Risk phrases:

Harmful if swallowed. Irritating to eyes,

Harmful may cause lung damage if swallowed. It is very toxic to aquatic organisms and may cause long term adverse effects in the aquatic environment.

Poisons Schedule: S6 Poison.

Emergency Overview:

Immediate Concerns:

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 inhaled.

Potential Health Effects:

Effects from overexposure may result from either swallowing, inhaling or coming into contact with the skin or eyes. Symptoms of overexposure include bleeding from the nose, tremors and convulsions. 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

First Aid:

If poisoning occurs contact a doctor or Poisons Information Center.

Inhalation:

Remove victim from area of exposure. Avoid becoming causality. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm, keep at rest until fully recovered. Seek medical advice if effects persist.



Skin:

If skin contact occurs, remove contaminated clothing and wash skin thoroughly. If irritation occurs seek medical advice.

Eye:

If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.

Ingestion:

Rinse mouth with water. If swallowed, do not induce vomiting unless supervised by physician. Give a glass of water. Seek medical advice.

Notes to physician:

Treat symptomatically. In cases of skin contact with synthetic pyrethroids, it has been reported that topical application of Vitamin E cream has a therapeutic value, eliminating almost 100% of the skin pain associated with synthetic pyrethroids.

5. FIRE FIGHTING MEASURES

Flash point: > 60°C

Specific Hazards:

Combustible liquid

Extinguishing Media:

Water fog (or if unavailable fine water spray), foam, dry agent (carbon dioxide, dry chemical powder).

Fire Fighting Advice:

On burning will emit toxic fumes. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapor or products of combustion.

Hazardous Decomposition Products:

Carbon monoxide, carbon dioxide, chlorine, fluorine, hydrogen chloride and hydrogen fluoride



6. ACCIDENTAL RELEASE MEASURES

Small Spills:

Wear protective equipment to prevent skin and eye contact. Avoid breathing in vapors. Work up wind or increase ventilation. Contain prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labeled containers for disposal.

Large Spills:

Clear area of all unprotected personnel. Wear protective equipment to prevent skin and eye contact. Avoid breathing in vapors. Work up wind or increase ventilation. Contain prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labeled containers or drums for disposal. If contamination of crops or waterways has occurred advise emergency services or State Department of Agriculture.

Release Notes:

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.

7. HANDLING AND STORAGE

Handling Advice:

Avoid skin and eye contact and breathing in vapor. Keep out of reach of children.

Storage Advice:

Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight. Store in a locked room or place away from children, animals, food, feedstuffs, seed and fertilizers.

Classified as a C1 (Combustible Liquid) for the purpose of storage and handling, in accordance with the requirements of AS 1940, Refer to State Regulations for storage and transport requirements.



8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure limits:

No value assigned for this specific material by the National Occupational Health and safety Commission.

Engineering Controls:

In the Work Place: Use in a well ventilated areas. Use with local exhaust ventilation or while wearing organic vapor / particulate respirator. Keep containers closed when not in use.

Personal Protective Equipment:

Personal Protection guide No. 1, 1998: H – Overalls Safety Shoes, Chemical goggles, Gloves, Respirator.

Manufacture, Packaging and Transport: Wear overalls, chemical goggles and impervious gloves. Avoid generating and inhaling dusts. If dust exists, wear dust mask/ respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

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

Respiratory:

For splash, mist or spray exposure wear, as a minimum, a properly fitted air-purifying respirator with an organic vapor cartridge or canister with any R, P or HE pre filter (approved by U.S. NIOSHA/MSHA, EU CEN or comparable certification organization). Respirator use and selection must be based on airborne concentrations.

Preparation and Use of Product:

Avoid contact with eyes and skin. Avoid inhaling spray mist. When preparing spray, wear cotton overalls buttoned to the neck and wrist and washable hat, elbow-length PVC gloves and goggles. When using the prepared spray with hand held application equipment in bananas and grapes, wear cotton overalls buttoned to the neck and wrist and elbow length PVC gloves. Wash hands after use. After each day's use, wash gloves, goggles and contaminated clothing.



9. PHYSICAL AND CHEMICAL PROPERTIES

Assay:	"Bifenthrin" 100 12 g/L
Physical State:	Light Brown Liquid
Odor:	Solvent
Solubility:	Dispersible in water
Specific Gravity:	0.93
pH:	6.7
Flash Point:	8°C
Partition Coefficient:	>6 LogP _{ow} (Bifenthrin)
Sublimation Point (°C):	Not Applicable
Solubility in Water:	Forms emulsion

10. STABILITY AND REACTIVITY

Stability

Reacts with oxidising agents. Product is stable for at least 2 years under ambient storage conditions.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion:

Swallowing can result in nausea, vomiting, diarrhea and abdominal pain. Swallowing large amounts may result in muscle tremors, central nervous system depression, convulsions and coma. If the victim is showing signs of central system depression (like those of drunkenness) there is greater likelihood of the patient breathing in vomit and causing damage to the lungs.

Eye Contact:

A mild eye irritant

Skin Contact:

Contact with skin may result in irritation. Will have a degreasing action on the skin. Repeated or prolonged skin contact may lead to irritant contact dermatitis. May cause tingling, burning, itching or numbness in exposed areas which is transient, that can last up to 36 hours.



Inhalation:

Breathing in vapor can result in headaches, dizziness and possible nausea. Breathing in high concentrations may result in the same symptoms described for "Ingestion".

Long Term Effects:

No information available for the product.

Toxicological Data:

Formulation:

Oral LD ₅₀ (Rat)	531 mg/kg
Dermal LD ₅₀ (Rabbit)	>2,000 mg/kg

Technical Bifenthrin:

Acute oral LD ₅₀ for rat	54.5 mg/kg
Acute dermal LD ₅₀ for rabbit	> 2,000 mg/Kg
Inhalation LC ₅₀	11.58 mg/L/1 hr (rat)
Skin:	Non-irritant (rabbit). Not a skin sensitiser (guinea pig)
Eyes:	Non-irritating (rabbits)

Bifenthrin was not genotoxic in battery of mutagenicity assays. Animals studies have shown that bifenthrin is not teratogenic nor does it cause reproductive toxic effects. ADI (Acceptable Daily Intake) for humans is 0.01 mg/kg bw/day.

The toxicity of the product may also be attributed to the solvent it contains which may cause central nervous system depression. Additive effects may occur with mixtures of solvents. Some solvents have effects on the eyes and skin.

The irritation nature of the product is attributed to the additive effects of the surfactants and solvent components.

Acute Effects from over Exposure:

This product has moderate inhalation, and low oral and dermal toxicity. It is practically non-irritating to the eyes and non-irritating to the skin. 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. These sensations are reversible and usually subside within 12 hours. In humans, ingestion of large amounts of propylene glycol has resulted in breathing and heartbeat, profuse sweating and seizures.

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 life time 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. Repeated overexposure to propylene glycol can produce central nervous system depression, hemolysis and minimal kidney damage.

Carcinogenicity:

IARC : Not listed
NTP : Not Listed
OSHA : Not Listed
Other : Not Listed (ACGIH)

12. ECOLOGICAL INFORMATION

Avoid contaminating waterways.

Bifenthrin:

Environmental Fate, persistence and degradation:

Bifenthrin is moderately stable in soil under aerobic conditions, with a half life ranging from 65 – 125 days (depending upon soil type). It has a high affinity for organic matter and is not mobile. There is a potential for bioconcentration up the food chain.

Aquatic Toxicity:

Very toxic to aquatic organisms. Risk of bioaccumulation in an aquatic species is high. Log Octanol/ Water Partition Coefficient: >6

48 hr LC ₅₀ (Daphnia magna):	0.00016 mg/L
96 hr LC ₅₀ (Rainbow trout):	0.00015 mg/L
96 hr LC ₅₀ (Blungell sunfish):	0.00035 mg/L

Terrestrial toxicity:



Harmful to terrestrial species. Harmful to bees

Oral LD ₅₀ (mallard duck):	2,150 mg/kg
Oral LD ₅₀ (bobwhite quail):	1,800 mg/kg
Oral LD ₅₀ (µg/bee):	0.1 µg/bee
Contact LD ₅₀ (µg/bee):	0.0146 µg/bee.

Environmental Data:

In soil, bifenthrin is stable over a wide pH range and degrades at a slow rate which is governed by soil characteristics. Bifenthrin will also persist in aquatic sediments. 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 CONSIDERATION

Triple or preferably pressure rinse containers before disposal. Add rinsing to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

For 110L Container: Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

For 1,000 L Container: Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

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

UN. No:	UN 3082		
Proper Shipping Name:	Environmentally Hazardous , substance, Liquid, N.O.S (Bifenthrin)		
Class:	9		
Classification Code:	M6		
Packing group:	III		
Subsidiary Risks:	9		
Special provisions:	274		
Limited quantities:	LQ28		
Packaging:	Packing instructions	P001, IBC03, LP01 R001	
	Special packing provisions	-	
	Mixed Packaging Provisions	MP15	
	Instructions	T4	
UN Portable tanks	Special Provisions	TP2 TP29	
	Tank Code	LGBV	
ADR Tank	Special Provision	-	
	Vehicle for tank carriage	AT	
	Transport Category	3	
Special provision carriage	Packages	VI	
	Loading, unloading & Handling	CV13	
Hazard Identification	90		

Road and Rail Transport:

Not classified as Dangerous Goods by the criteria of Dangerous Code (ADG Code) for transport by Road and Rail.

Marine Transport:

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.



This material is classified as a severe Marine Pollutant (PP) according to the International Maritime Dangerous Goods Code.

UN No: 3082
Class-primary: 9 Miscellaneous Dangerous Goods
Packing Group: III

Air Transport:

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

UN No: 3082
Class-primary: 9 Miscellaneous Dangerous Goods
Packing Group: III

15. REGULATORY INFORMATION.

Classification: This material is hazardous according to criteria of NOHSC

Xn: Harmful
Xi: Irritant

Risk Phrase(s): R22: Harmful if swallowed.
R36: Irritating to eyes
R65: Harmful; may cause lung damage if swallowed.

Safety Phrase(s): S1/2: Keep locked up and out of the reach of children
S13: Keep away from food, drink and animal foodstuffs.
S24/25: Avoid contact with skin and eyes.
S36/37: Wear suitable protective clothing and gloves.

Poisons Schedule: S6 Poison.

All the constituents of this material are listed on AICS or are National Registration Authority (NRA) approved active constituents.

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.

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)

Comments: Hazard Code: 3XE

U.S. EPA Signal Word: Caution.

16. OTHER INFORMATION

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