

SAFETY PRECAUTIONS

1. Handle with care. Avoid splashing/contact. Poisonous by swallowing, inhalation and contact with skin and eyes.
2. Wear protective clothing, boots, rubber gloves and safety goggles.
3. KEEP OUT OF THE REACH OF CHILDREN.
4. KEEP APART FROM FOOD AND FOODSTUFFS.
5. KEEP UNDER LOCK AND KEY.
6. Do not inhale fumes or spray mist.
7. Avoid contact with skin and eyes.
8. Prevent spray drift onto other crops, grazing, rivers, dams or other areas not under treatment.
9. Do not eat, drink or smoke whilst mixing or applying or before washing hands and face and changing clothes.
10. Wear protective clothing, boots, rubber gloves and face shield when handling the product.
11. Wash contaminated clothing daily.
12. FLAMMABLE – keep away from open flame.
13. Toxic to fish and birds.
14. Wash with soap and water after use and accidental skin contact.
15. Clean all equipment thoroughly after use. Dispose of wash water where it will not contaminate crops, grazing, rivers, dams and boreholes.
16. Triple rinse empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter, rinse the container three times with a volume of water equal to a minimum of 10% of that of the container. Add the rinsings to the contents of the spray tank before destroying the container in the described manner.
17. Destroy the empty container by perforating and flattening and dispose of it in a safe manner.
18. Never re-use the empty container for any other purpose whatsoever.

SYMPTOMS OF HUMAN POISONING: Poisoning symptoms are non-specific.

FIRST AID

If **swallowed**, seek medical advice immediately and show this container or label. DO NOT induce vomiting. **Eye Contact:** Rinse immediately with plenty of clean water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required. **Skin Contact:** Take off all contaminated clothing immediately. Wash off immediately with plenty of water. If skin irritation persists, call a physician. Wash contaminated clothing before re-use. **Inhalation,** Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. Keep patient warm and at rest. Call a physician or Poison Information Centre immediately. **NOTES TO PHYSICIAN** Inducing vomiting to remove this preparation from the stomach can increase the risk of chemical pneumonitis and pulmonary edema due to aspiration of stomach contents. The active ingredient in this compound, if allowed to penetrate the skin may stimulate the nerve fibers in the skin, causing an irritation similar to that of sunburn. The active ingredient will be drawn readily into a non-polar environment such as a fat based oil or cream. Water is highly polar and after a prolonged period of time will not decrease and may prolong the irritation. Treat discomfort due to irritation symptomatically.

ANTIDOTE No specific antidote.

SAFETY PRECAUTIONS**Empty container disposal**

Invert the empty container over the spray tank or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter, rinse the container three times with a volume of water equal to a minimum of 10% of the container. Add the rinsings to the contents of the spray tank. Destroy the empty container by perforation and flattening. Return to supplier for recycling. DO NOT use for any other purpose. Dispose of the wash water at a site for the disposal of pesticides.

Decontamination of sprayer

Clean applicator thoroughly after use and ensure that all traces of LAMBDA-CYHALOTHRIN 50EC are removed. Make use of the following method;

- (a) Drain and rinse tank, spray boom and hoses with clean water for at least 10 minutes
- (b) Fill tank with clean water and add it to 1 litre household bleach (5%) or 1.5 Litres of household bleach (3.5%) per 200 Litres of water. Rinse hoses and spray boom and leave in tank for 15 minutes whilst agitating. Drain through nozzle outlets.
- (c) Repeat step (b) and thereafter, rinse thoroughly with clean water and dispose of the wash water at a site designated for the disposal of pesticides.

LAMBDA-CYHALOTHRIN 50EC

Insecticide

Reg. No. 19-D-136-99

250ml



DANGEROUS POISON

Composition**mass/volume**

Lambda-cyhalothrin.....50g/L
Inert ingredients.....950g/L

Chemical Group:

Pyrethroid

An emulsifiable concentrate contact and stomach insecticide for the control of various insect pests as indicated on cotton.

TO CAUSE A HAZARD IN THE USE, STORAGE OR DISPOSAL OF THIS SUBSTANCE IS AN OFFENCE

KEEP OUT OF REACH OF CHILDREN



1. Triple rinse clean container after use
2. Punctures holes in bottom
3. Return to Maguires Recycling Facilitator / Return to nearest recycling facility

DIRECTIONS FOR USE: Use only as indicated.

Compatibility: Do not mix LAMBDA-CYHALOTHRIN 50EC with seaweed extract.

Mixing Instructions: Half fill the spray tank with clean water. Add the required amount of LAMBDA-CYHALOTHRIN 50EC and fill the tank while agitating. Ensure thorough agitation while spraying.

Application: It is necessary to fit equipment with hollow cone nozzles that give medium to fine droplets when using a conventional high volume sprayer. Calibrate the equipment before use and ensure correct application. The spray mixture must be evenly distributed over the target area. Do not spray plants wet with dew or rain.

Cotton – general: Pyrethroids must only be used during the pyrethroid window for the control of American Bollworm. (No sprays should be necessary for American bollworm control during the first eight weeks after plant emergence.) Should Red bollworm be present, a product which does not promote Red spider mite should be used.

LAMBDA-CYHALOTHRIN 50EC must be applied on a basis of regular weekly scouting and the correct interpretation of the results. When more than 5 American and 2 Red or 2 Spiny bollworm larvae are found / 24 plants / 15 ha during scouting, a spray has to be applied. The success of the treatment depends on coverage and penetration achieved by the spray application. Larvae already inside the bolls may not be controlled successfully. Allow 4 days to achieve maximum effect of the spray, scout and repeat application if necessary.

	Plant Height - metres	0.4-0.9	>0.9	OVERALL APPLICATION: apply with boom and nozzle. Cotton should be treated with sufficient spray mixture for good coverage. Use 100 Litres of spray mixture/ha for plants smaller than 40cm and 150 Litres spray mixture/ha for plants taller than 40cm.
COTTON				
American bollworm	Spray volume -Litres/ha	65	100	
Red bollworm	Mistblower	100	150	
Spiny bollworm	Knapsack tailboom	100	100	
Cotton stainer	Knapsack lance	10	15	
	Aerial (add molasses at 25% by volume to improve spray recovery and penetration in the crop)			
	Lambda-Cyhalothrin 50EC (ml/ha)	133	200	
COTTON	Plants smaller than 60 cm:			ULV APPLICATION: Only acknowledged ULV applicators must be used. Apply a total spray mixture volume of 3l/ha. Make the recommended LAMBDA-CYHALOTHRIN 50EC dosage up with sunflower oil to a spray volume of 3 litre.
American bollworm and Red bollworm	88 ml/ha in sunflower oil			
	Plants taller than 60 cm:			
	120 ml/ ha in sunflower oil			
Tobacco Lands	Application: Drench 25ml/100 litres of water. Apply 30ml cup of mix per plant to wet stem and surrounding soil.			Immediately after planting or later.
Cutworms	Application Spray: 175ml/ha in 500 litres of water (35ml/100 litres) in 300mm swath over plants. Can be applied in tank mix with herbicide.			Immediately after planting or later.
	Application: Drench/stem 25ml/ha in 100 litres of water and apply 1-2x30ml cups of mix per plant to wet stem and surrounding soil.			At early damage (post planting).
MAIZE		400 ml/ ha		Apply as soon as 10% plants show damage and direct spray into funnels. Application must be before canopy closure. Do not apply Lambda-cyhalothrin consecutively. Apply as soon as eggs are found on 5% of the plants or 10% plants show damage. A second application may be required 10-14 days later. Apply directly into funnel in at least 3l water/100 m row.
Fall Army Worm (<i>Spodoptera</i>)				
Stalkborer (<i>Busseola fusca</i>) (first and second generation)		1.2 ml/100 m row (120 ml/ha)		

WARNINGS:

Withholding periods (minium number of days between last application and harvest of feeding):
Cotton (grazing).....28 days

Date of Manufacture:

Batch No.:

Manufactured by:

NOVA AGRO (HK) LTD
6TH FLOOR, WYNDHAM PLACE,
44 WYNDHAM STREET,
CENTRAL HONG KONG

Registration held by:

MAGCHEM (PVT) LIMITED
2274 TILBURY ROAD,
WORKINGTON, HARARE,
ZIMBABWE

MATERIAL SAFETY DATA SHEET (MSDS)
LAMBDA-CYHALOTHRIN 50EC

1. IDENTIFICATION OF PRODUCT:

Active Ingredient: Lambda-cyhalothrin 50g/l
Chemical Family: Pyrethroid pesticide.
Formula: $C_{23}H_{19}ClF_3NO_3$
Chemical name: [1 α (S*),3 α (Z)-(±)-cyano(3-phenoxyphenyl)methyl 3-(2-chloro-3,3,3-trifluoro -1-propenyl)-2,2-dimethylcyclopropanecarboxylate] (CA).

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Identity	CAS-no.	Percent (%) m/m
Lambda-cyhalothrin Tech.	91465-08-6	5.0
Other Ingredients	N/A	95.0

3. HAZARDS IDENTIFICATION:

Physical hazards: Combustible liquid

Health hazards: Corrosive (skin), irritant (eye, skin sensitization), toxic (oral), harmful (mucous membrane irritation, central nervous system depression, lung injury).

Based on the aromatic petroleum solvent – harmful (central nervous system depression, gastrointestinal disturbance).

4. FIRST AID MEASURES:

IF IN EYES: Immediately flush with plenty of water for at least 15 minutes. If redness, itching or a burning sensation develops, have eyes examined and treated by medical personnel.

IF ON SKIN: Wash material off the skin with plenty of soap and water. Obtain medical attention. Wash contaminated clothing and decontaminate footwear before reuse.

IF SWALLOWED: Give one or two glasses of water to drink and refer to medical personnel or take direction from either a physician or a poison control center. Never give anything by mouth to an unconscious person. Vomiting should only be induced under the direction of a physician or a poison control center. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer water. Immediately transport victim to an emergency facility.

IF INHALED: Remove victim to fresh air. If not breathing, give oxygen. Obtain medical attention.

MEDICAL ADVICE: Inducing vomiting to remove this preparation from the stomach can increase the risk of chemical pneumonitis and pulmonary edema due to aspiration of stomach contents. The active ingredient in this compound, if allowed to penetrate the skin may stimulate the nerve fibers in the skin, causing an irritation similar to that of sunburn. The active ingredient will be drawn readily into a non-polar environment such as a fat based oil or cream. Water is highly polar and after a prolonged period of time will not decrease and may prolong the irritation. Treat discomfort due to irritation symptomatically.

5. FIRE FIGHTING MEASURES:

Flash point: 14⁰C

Auto-ignition temperature: No data

Flammable limits(STP): 1.1 - 6.1% (solvent)

EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical, halogenated agents. Water spray may be used to cool containers, but a water stream may spread flames.

FIRE AND EXPLOSION HAZARDS: Keep fire exposed containers cool by spraying with water.

PROTECTIVE EQUIPMENT: A self-contained breathing apparatus and suitable protective clothing must be worn in fire conditions.

Unusual fire and explosion hazards: Combustible liquid if heated above the flash point, heavy vapors can flow along surfaces to distant ignition sources and flash back.

6. ACCIDENTAL RELEASE MEASURES:

PERSONAL PRECAUTIONS: Make sure all personnel involved in the spill clean-up follow good industrial hygiene practices. A small spill can be handled routinely. Ensure suitable personal protection (including respiratory protection) during removal of spillages. Wear suitable protective clothing and eye protection to prevent skin and eye contact.

ENVIRONMENTAL PRECAUTIONS: Washings must be prevented from entering surface water drains.

ADDITIONAL INFORMATION:

- a) Spread a suitable absorbent as clay on the spill, and shovel into an open drum.
- b) Generously cover the contaminated areas with common, household detergent. Using a stiff brush and small amounts of water, work the detergent into the remaining spilled material forming a slurry. Brush the slurry into cracks and crevices and allow standing for 2-3 minutes. Be careful to completely avoid skin or eye contact. Do not splatter on oneself or bystanders.
- c) Spread absorbent on the slurry liquid and shovel mixture into the open drum.
- d) Repeat a) and c) if necessary.
- e) Rinse with a small amount of water and use absorbent to collect the wash solution. Shovel into the drum.
- f) Seal drum and dispose of contaminated material in a facility permitted for hazardous waste. Large spills should be handled according to a spill plan.

7. HANDLING AND STORAGE:

SAFE HANDLING ADVICE: Avoid contact with skin and eyes. When using, do not eat, drink or smoke. Wash face and hands before eating, drinking or smoking.

REQUIREMENTS FOR STORAGE ROOMS: Keep in original containers, tightly closed, out of reach of children. Keep away from food, drink and animal

feeding stuffs. Containers should be stored in a cool, dry, well-ventilated area away from flammable materials and sources of heat or flame. Exercise due caution to prevent damage to or leakage from the container.

8. EXPOSURE CONTROL / PERSONAL PROTECTION:

Ventilation: Use ventilation adequate to maintain safe levels.

This product is intended for use outdoors where engineering controls are not necessary. If use conditions are different (e.g. product reformulation or repackaging), employee exposure should be minimized using traditional techniques such as enclosed system design and/or local exhaust ventilation.

EYE PROTECTION: Eye contact with the material should be avoided through the use of chemical safety glasses, goggles or a faceshield, selected in regard to exposure potential.

BODY PROTECTION: This product is FIFRA regulated. Refer to product labeling for end-user Personal Protection requirements. Skin contact should be prevented through the use of footwear, impervious gloves and long-sleeved clothing.

RESPIRATORY PROTECTION: Use MSHA-NIOSH approved respirator for pesticides.

Other protective equipment: Eyewash station and safety shower in work area

9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance: Transparency yellow to amber liquid.

Density (20°C): 0.895

Solubility: Miscible with water.

pH value: 6.0

Flash point: 29°C

10. STABILITY AND REACTIVITY:

HAZARDOUS REACTIONS (CONDITIONS TO AVOID)

Hazardous polymerization: Will not occur.

Stable under normal conditions.

HAZARDOUS REACTIONS (MATERIALS TO AVOID)

Incompatible materials: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Combustion Products: carbon dioxide, carbon monoxide, nitrogen oxides, ammonia, halogen, halogen acids, possible trace amounts of carbonyl halide.

11. TOXICOLOGICAL INFORMATION:

ACUTE TOXICITY (LETHAL DOSES)

LD₅₀ Oral male rats

Dose: 64 mg formulation/kg

LD₅₀ Oral female rats

Dose: 110 mg formulation/kg

Additional information: Irritation of the mouth, pharynx, esophagus and stomach can develop following ingestion. Severe gastrointestinal disturbance is associated with ingestion of the hydrocarbon solvent. Ingestion of excessive quantities can also induce signs of central nervous system depression (e.g. drowsiness, dizziness, loss of coordination and fatigue). Small amounts of the hydrocarbon solvent, if aspirated into the lungs during ingestion or subsequent vomiting, may induce severe lung congestion resulting in labored breathing, coma and death.

LD₅₀ Dermal

Dose: 2ml formulation/kg

LC₅₀ Inhalation male rats

Dose: 315mg/m³

Period: 4 hours

ACUTE TOXICITY (IRRITATION, SENSITIZATION ETC.)

Eye Irritation rabbit

Results: MODERATE IRRITANT TO SEVERE IRRITANT

Skin Irritation rabbit

Results: SEVERE IRRITANT

Skin Sensitisation guinea pig

Results: MODERATE SENSITIZER

Inhalation

Results: Highly toxic

Symptoms: Adverse effects observed at lethal dose levels were mild respiratory irritation, reduced reflexes, tremors and lung edema. High concentrations of vapors or aerosols of the solvent component are associated with central nervous

system depression (e.g. drowsiness, dizziness, loss of coordination and fatigue), unsteady gait, and mucous membrane irritation of eyes, throat and upper respiratory passages.

GENERAL INFORMATION ABOUT ACUTE OR OTHER TOXICITIES

Other effects of overexposure: Because xylene is present at greater than 1% in the product, several potential chronic health hazards should be considered. Several studies report that offspring of laboratory animals exposed by gavage at doses approaching lethal doses during pregnancy developed skeletal anomalies. Because the doses were extraordinarily high, the gavage route of administration is inappropriate and an occupational exposure to an equivalent dose by any route is improbable, it is highly unlikely this particular hazard will be expressed. Damage to other organs (liver, kidney, blood forming elements) is possible after acute exposures to very high concentrations, however organ effects have not been clearly demonstrated in chronic studies on the mixed xylenes. Because exposure potential is a critical element in the expression of a potential health hazard, this product, if handled in accordance with good industrial hygiene practice, will not present an actual hazard in the workplace.

12. ECOLOGICAL INFORMATION:

ECOTOXICITY

Additional inform: This ecological assessment is calculated from data available on the components of the formulation.

Assessment: Very toxic to aquatic organisms.

Toxicity to fish

LC₅₀ bluegill sunfish

Dose:(calculated) 5.7µg/l

Period: 96 hours

Method:(flow through)

Toxicity to Daphnia

EC₅₀ *Daphnia magna*

Dose:(calculated) 1.8µg/l

Period: 48 hours

13. DISPOSAL CONSIDERATIONS

This material is extremely toxic to fish. Do not contaminate waterways by cleaning of equipment or by disposal of wastes. Untreated effluent should not be discharged where it will drain into lakes, streams, or ponds. Because of a flash point below 140 F, discarded product is a hazardous waste, No. D001, under RCRA, 40 CFR 261.21. Dispose of in facility permitted for hazardous waste. Adsorbent must be sufficient to assure that no free liquid is present in the disposal container.

CONTAINER DISPOSAL: Empty container retains product residue. Observe all hazard precautions. Do not distribute, make available, furnish or reuse empty container except for storage and shipment of original product. Remove all product residues from container and puncture or otherwise destroy empty container before disposal. Empty container may contain explosive vapors. Keep away from heat, sparks and flames. Do not weld or use a cutting torch on or near container.

14. TRANSPORT INFORMATION

ROAD TRANSPORT DOT

Proper Shipping Name: PESTICIDE, LIQUID, TOXIC, FLAMMABLE, N.O.S., (contains lambda-cyhalothrin/xylene range solvents)

Class: 6.1

UN No: UN2903

Packaging group: III

15. REGULATORY INFORMATION:

HAZARDOUS INGREDIENTS

LAMBDA-CYHALOTHRIN TECHNICAL

Signal Word:	CAUTION
Acute health:	Yes.
Chronic health:	Yes.
Sudden release of pressure:	No.
Fire:	High.
Reactivity:	No.

16. OTHER INFORMATION

The information on this sheet is not a specification; it does not guarantee specific properties. The information is intended to provide general guidance as to health

and safety based upon our knowledge of the handling, storage and use of the product. It is not applicable to unusual or non-standard uses of the product, nor where instructions or recommendations are not followed.

Emergency Phone Number: 00263 4 704173