

Safety Data Sheet

ENSTAR - Reg. No: L 9975 (Act No 36 of 1947)

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1) IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER.	
Product name:	ENSTAR
Other means of identification:	Chlorpyrifos : 338 g/L Lambda-cyhalothrin: 12 g/L
UN number:	2903
Recommended use:	Insecticide
Restrictions on use:	Agriculture
Distributed by:	MERIDIAN AGRITECH P O BOX 436 MODDERFONTEIN TEL 011 8228509 FAX 0866901386 MOBILE: 0834006056 www.agritech.co.za
Emergency Number:	POISON CENTRE (UNITAS HOSPITAL) 012 664 1100 WESTERN CAPE POISONS TELEPHONE SERVICE 0861 555 777 RAPID SPILL RESPONSE 0800 775 3305 GRIFFON POISON CENTRE: 082 446 8946
Chemical Name:	Chlorpyrifos + Lambda-cyhalothrin O,O-diethyl O-3,5,6-trichloro-2-pyridyl phosphorothioate Plus A reaction product comprising equal quantities of (S)- α -cyano-3phenoxybenzyl (Z)-(1R,3R)-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylate and (R)- α -cyano-3-phenoxybenzyl (Z)-(1S,3S)-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)2,2-dimethylcyclopropanecarboxylate
2) Classification of the substance / mixture:	
Classification of the product:	Oral: Acute Tox.4: H302 Dermal: Acute Tox.5: H313 Dermal: Skin Irrit. 3: H316 Eye: Eye Dam. 1: H318 Aquatic Acute: Aquatic acute 1: H400 Aquatic chronic: Aquatic chronic.1: H410 H301 - Toxic if swallowed. H312 - Harmful in contact with skin. H313 - May be harmful in contact with skin. H315 - Causes skin irritation. H330 - Fatal if inhaled GHS: Category 3 WHO: Category 2 Full text of symbols and R-phrases: see section 15.

Label elements:



Signal word: Danger

Hazard statements

H302

H304

H313

H316

H318

H331

H400

H410

Precautionary statements:

P261

P264

P270

P271

P273

P280

P301/310

P304/340

P331

P391

P405

P501

Health effects: eyes:

May cause serious eye damage.

Health effects: skin:

May cause mild irritation. Can cause dermatitis through defatting of the tissue.

Health effects: ingestion

Highly toxic if swallowed. May be fatal if swallowed and enters airways.

Health effects: inhalation

Toxic if inhaled

Health effects: Other

No data available

3) COMPOSITION / INFORMATION ON INGREDIENTS:

Mixture:

Chemical name	% composition	CAS No.	EC No.	Classification according to Regulation EC 1272/2008 (CLP)	Classification according to 67/548/EEC
Chlorpyrifos		2921-88-2	220-864-4	Acute Tox. 3 (H301). Aquatic Chronic 1 (H410) Aquatic Acute. 1 (H410).	Danger
Lambda-cyhalothrin		91465-08-6		Acute Tox. 3 (H301) Acute Tox. 4 (H312) Acute Tox. 2 (H330) Aquatic Acute. 1 (H400) Aquatic Chronic. 1 (H410)	Danger

Emulsifier		n/a		Skin Irrit. 2 (H315) Eye. Dam. 1 (H318)	Xi, R41, R38
Solvent	<60	64742-94-5		Asp. Tox.1 (H304)	Xn, Carc. Cat. 3; R40, R65, R66, R67, N; R51/53

Full text of R- and S-phrases: see section 15.

4) First Aid Measures:

Eye contact:

Flush eyes with plenty of clean water or saline solution for at least 20 minutes while holding the eyelids open. **Seek medical assistance immediately.**

Skin contact:

Immediately flush body and clothes with large amounts of water. Remove contaminated clothing, footwear and leather goods. Wash affected areas with a non-abrasive soap and plenty of water for at least 15 minutes. Do not re-use clothing until it is thoroughly cleaned or laundered. Seek medical assistance if irritation occurs. Patients who become sensitised may require specialised medical management with anti-inflammatories.

Ingestion:

Never give anything by mouth to an unconscious person. Do not induce vomiting unless instructed to by a poison control centre or medical doctor. Rinse the patient's mouth thoroughly with water if the patient is alert and able. Consider gastric lavage, but prevent aspiration. Observe the patient for respiratory difficulty from aspiration pneumonitis. For advice, contact the National Poisons Centre. **Seek medical assistance immediately.**

Inhalation:

Remove patient to fresh air. Loosen clothing around neck. Lie down and keep warm and rested. Lambda0cyhalothrin may cause severe pneumonitis if aspirated. If breathing is shallow or has stopped ensure airway is clear, apply resuscitation and **seek medical assistance immediately.**

Most important symptoms and effects, acute and delayed:

Symptoms of exposure to this product include: nausea, headache, tiredness, giddiness, blurred vision and pupillary constriction. Depending on severity of poisoning these symptoms may worsen with the onset of vomiting, abdominal pain, diarrhoea, sweating and salivation. Confusion, slurred speech, ataxia, loss of reflexes are some of the central nervous system effects that may lead to misdiagnosis of acute alcoholism.

Overexposure effects:

After inhalation of vapours or aerosols, effects may appear within minutes: ocular and respiratory effects generally appear first. These include marked meiosis, ocular pain, conjunctival congestion, diminished vision, ciliary spasm and brow ache.

Indication of immediate medical attention and special treatment needed: Advice to physician

With acute systemic absorption, meiosis may not be evident due to systemic absorption; or due to sympathetic discharge in response to the hypertension. In addition to rhinorrhea and hyperaemia of the upper respiratory tract, respiratory effects may consist of "tightness" in the chest and wheezing respiration caused by the combination of bronchoconstriction and increased bronchial secretion.

Gastrointestinal symptoms occur earliest after ingestion and may include anorexia, nausea and vomiting, abdominal cramps, and diarrhoea.

With percutaneous absorption of liquid, localized sweating and muscular fasciculation in the immediate vicinity are often the earliest manifestations.

Severe intoxication may result in extreme salivation, involuntary defecation and urination, sweating, lacrimation, penile erection, bradycardia and hypotension.

The airway must be kept clear to maintain respiration, particularly when the patient is unconscious or has vomited. The mouth and pharynx should be cleared and dentures removed. The jaw should be supported and the patient placed in a face down position with the head down and turned to one side, with the tongue drawn forward.

First aid should include, if necessary, mouth-to-nose respiration, cardiac massage and avoidance of injury in patients with trauma.

Atropine must be administered as early as possible in an adequate dosage. Patients with organophosphate poisoning need amounts of atropine far in excess of doses usually employed in medical practice. The objective is to achieve atropinisation, as evidenced by dilation of the pupils, drying secretion, pulse rate of over 120 per minute, and flushing skin. In order to prevent gastrointestinal absorption in unconscious patients that have swallowed this product, perform stomach lavage using bicarbonate solution and activated medical charcoal.

In less severe cases, start with 2 mg atropine intravenously for adults or 0.05 mg atropine/kg body weight intravenously for children under 12 years of age and repeat administration of the drug at 15 to 30 minute intervals.

In **severe cases**, a total atropine dose of 20 to 80 mg in the first hour may be needed, with repeated drug administrations at 3 – 10 minute intervals. When signs of atropinisation appear, the dosage and frequency of administration should be reduced to a schedule that will maintain full atropinisation for at least 24 hours. Over-dosage with atropine is rarely serious, but under-dosage may be fatal in poisoning with organophosphorous compounds.

In any severe progressive case of poisoning a cholinesterase reactivator such as pralidoxime (2PAM), if available, should be administered, preferably within 8 hours after intoxication. An average dose is 1 g for an adult (up to 50 mg/kg for children), usually given half as a single intramuscular or intravenous injection and the other half as an intravenous infusion with glucose and or saline.

In severe cases this treatment may be repeated in 1 to 2 hours, then at 10 to 12 hour intervals if needed, but not beyond 24, or 48 hours at the most. Pralidoxime must be administered very slowly. If respiration is depressed during, or after, pralidoxime injection, pulmonary ventilation should be assisted mechanically. Toxogonin is a more recent cholinesterase reactivator. It may be administered instead of 2PAM at a dose of 250mg intra-muscularly for adults (4 to 8 mg/kg for children) and, if necessary, repeated after 1 to 2 hours. Diazepam should be included in the therapy of severe cases and whenever convulsions appear. Doses of 5 – 10 mg for adults (2 – 5 mg for children) can be administered intravenously or subcutaneously or per rectum, and repeated as needed.

NOTE

Because of their respiratory-depressant effects, morphine and similar drugs are contraindicated for patients with organophosphorous compound poisoning. Avoid aminoglycosides and succinylcholine, which have a blocking effect on the neuromuscular junction. Phenothiazines, reserpine and theophylline are contraindicated in organophosphorous poisoning.

5) Fire-Fighting Measures:

Suitable extinguishing media:

Alcohol-resistant foam, carbon dioxide, dry chemical powder. Water spray may be used to cool unaffected stock, but do not allow water to come into contact with the product.

<p>Unsuitable extinguishing media:</p> <p>Special hazards arising from the substance or mixture:</p>	<p>Avoid the use of a solid water stream as this may cause spreading.</p> <p>Fire may produce irritating and / or poisonous vapours (toxic fumes of hydrogen cyanide, chlorine, and oxides of nitrogen and carbon), mists or other products of combustion.</p>
<p>Fire-fighting:</p> <p>Protective clothing:</p>	<p>Remove spectators from surrounding area. Isolate the fire area and evacuate downwind. Use a recommended extinguishing agent for the type of surrounding fire. Fight the fire from the maximum distance and, for large fires, use unmanned hose holders or monitor nozzles. Contain fire control agents for later disposal. Avoid inhaling hazardous vapours and fumes from burning materials. Keep upwind. Remove container from fire area if possible and without risk. Water can be used to cool unaffected containers but it must be contained for later disposal. Use as little water as possible and do not allow water to come into contact with the product. Do not scatter the material. Avoid pollution of waterways. Avoid the accumulation of polluted run-off from the site.</p> <p>Full protective clothing and self-contained breathing apparatus</p>
<p>6) Accidental Release Measures:</p>	
<p>Personal precautions:</p> <p>Environmental precautions:</p> <p>Cleaning procedure:</p> <p>Disposal:</p>	<p>Avoid contact with skin, eyes or clothes. Avoid inhalation of the spray or fumes. Ventilate the area of a spill or leak, especially in confined areas. For personal protection see Section 8.</p> <p>Do not contaminate waterways, drains and groundwater. Heavily contaminated soil layers should be removed and disposed of in an approved way. If contamination of waterways, drains, rivers or lakes is unavoidable, warn the local authorities (Police and Department of Water/Environmental affairs) immediately.</p> <p>Do not touch any spilled material. Stop the leakage if it is safe to do so. Wear protective clothing. Clear area of unprotected personnel. Contain and absorb liquid spills with an inert material (such as earth or sand or other suitable non-combustible absorbent material). Remove by scoop or vacuum. Use an approved industrial vacuum cleaner for removal and place into clean, dry, marked and sealable waste containers. If the potential for fire exists, blanket the spill with foam as a precautionary measure. If the product comes into contact with water, contain the contaminated water for later disposal. Prevent the material from spreading by damming it in with absorptive material. Do not flush the spilled material into drains. Keep all spectators away and upwind. Remove any sources of naked flames or sparks.</p> <p>Label the drums appropriately and dispose in a safe and approved manner in accordance with local regulations.</p> <p>Waste Disposal:</p> <p>In accordance with local and national regulations. Open dumping or burning of this material is prohibited. Any waste resulting from the use of this product cannot be re-used and re-processed. Never pour any untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Do not contaminate water, food or feed by disposal. Contaminated absorbents, surplus product, etc. should be burned at an approved high-temperature incinerator (> 1 000°C) with effluent gas scrubbing. Where no incinerator is available, surplus product should be diluted and buried in a designated and approved landfill.</p>

Gloves:	Employee must wear appropriate chemical-resistant gloves to prevent contact with this substance
Eye protection:	The use of safety goggles with side shields is recommended when the respirator does not provide eye protection.
Respiratory protection:	An approved respirator suitable for protection from dusts and mists of pesticides is required. The limitations of the respirator use as specified by the approving agency and the manufacturer must be observed.
Emergency eye wash:	Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

9) Physical & Chemical Properties:

Form:	Liquid
Colour:	Light tan
Odour:	Characteristic
Odour threshold:	No data available
pH:	6.0 – 7.0
Melting point / Freezing point	No data available
Initial boiling point and boiling range	No data available
Flash point:	Flammable
Evaporation rate:	No data available
Flammability (solid, gas)	No data available
Upper/ lower flammability or explosive limits:	No data available
Vapour pressure:	No data available
Vapour density:	No data available
Relative density:	No data available
Solubility(ies)	Emulsifies in water
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature:	No data available
Viscosity:	No data available

10) Stability & Reactivity:

Reactivity:	No data available.
Chemical stability:	When stored appropriately this product should show no significant degradation for 2 years from the date of manufacture.
Hazardous decomposition product(s):	Product undergoes decomposition at temperatures above 160 °C. Hydrogen chloride, oxides of carbon, sulphur and nitrogen and compounds of chlorine, fluorine and carbon monoxide may be released when the product decomposes on heating.
Conditions to avoid:	Heat, flames, sparks and other sources of ignition.
Incompatible materials:	Chlorpyrifos is incompatible with alkaline materials (such as Bordeaux mixture or Lime Sulphur). Chlorpyrifos may be incompatible with pesticides containing carboxylic acid amide groups or other strongly basic groups, such as Thiram and Captab. A compatibility test is required before using with other products. Do not physically mix the concentrate directly with other pesticide concentrates; always dilute first.

11) Toxicological Information:

Chlorpyrifos

Acute:

Oral LD50 135 – 163 mg/kg, rat

Dermal LD50 > 5 000mg/kg, rabbit

Inhalation LC50 (4h): >0.2 mg/L , rat

Skin irritation : Mild irritant

Eye irritation : Mild irritant, rabbit

Sensitisation : Not a skin sensitiser (guinea pigs), but may cause sensitization during prolonged exposure.

Other : No data available.

Lambda-cyhalothrin

Acute:

Oral LD50 for male rats 79, female rats 56 mg/kg.

Dermal LD50 632 – 696 mg/kg, rat

Inhalation LC50 (4h): 0.06 mg/L air (total particulate), rat

Skin irritation : Not an irritant

Eye irritation : Mild irritant, rabbit

Sensitisation : Not a skin sensitiser (guinea pigs)

Other : No data available

12) Ecological Information:

Information below based on active ingredient:

Chlorpyrifos:

Bees: Toxic to bees. LD₅₀ (oral) 360 ng/bee; (contact) 70 ng/bee.

Birds: Acute oral LD₅₀ for mallard ducks 490, house sparrows (*Passer domesticus*) 122, chickens 32–102 mg/kg. Dietary LC₅₀ (8 d) for mallard ducks 180, bobwhite quail 423 ppm.

Fish : LC₅₀ (96 h) for bluegill sunfish 0.002–0.010, rainbow trout 0.007–0.051, roach 0.25, fathead minnows 0.12–0.54 mg/l.

Algae : NOEC for *Selenastrum capricornutum* >0.4 mg/l

Worms: LC₅₀ (14 d) for *Eisenia foetida* 210 mg/kg soil

Other aquatic species: *Daphnia magna*, LC₅₀ (48 h) 1.7 µg/l.

Persistence/Degradability

Persistence: In soil, chlorpyrifos is degraded at a moderate rate; DT₅₀ (lab.) 10–120 d (25 °C); field DT₅₀ for soil-incorporated applications 33–56 d, for soil-surface applications 7–15 d. Primary route of degradation is transformation to 3,5,6-trichloropyridin-2-ol, which is subsequently degraded to organochlorine compounds and CO₂. K_{oc} 1250–12 600.

Lambda cyhalothrin:

Bees: LD₅₀ (oral) 909 ng/bee; (contact) 38 ng/bee.

Birds: Acute oral LD₅₀ for mallard ducks >3950 mg/kg. Dietary LC₅₀ for quail >5300 mg/kg. No accumulation of residues in eggs or tissues.

Fish : LC₅₀ (96 h) for bluegill sunfish 0.21, rainbow trout 0.36 µg/l.

Algae : E_rC₅₀ (96 h) for *Selenastrum capricornutum* >1000 µg/l.

Worms: LC₅₀ for *Eisenia foetida* >1000 mg/kg soil.

Other aquatic species: *Daphnia magna*, EC₅₀ (48 h) 0.36 µg/l.

Other beneficial spp. Toxic to some non-target arthropods. Effects under field conditions reduced, with rapid recovery.

Persistence/Degradability

Soil/Environment Rapidly degraded in soil; DT₅₀ for microbial degradation 23–82 d, for field soil 6–40 d. Strongly adsorbed to soil and sediment organic matter, K_{oc} 330 000. Negligible potential for leaching of lambda-cyhalothrin and its

degradation products through soil. Rapid dissipation from water in aquatic systems. DT50 for dissipation from surface waters in lab. Water-sediment systems 5–11 h; in a microcosm, DT50 <3 h. Rapid and extensive degradation of parent compound in aquatic systems; DT50 for degradation in lab. Water-sediment systems 7–15 d; in a microcosm, DT50 <3 h, DT90 <3 d. Lambda-cyhalothrin is not persistent in water.

Considered a marine pollutant.

13) Disposal Considerations:

Waste Disposal: In accordance with local and national regulations. Open dumping or burning of this material is prohibited. Any waste resulting from the use of this product cannot be re-used and re-processed. **Never** pour any untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Do not contaminate water, food or feed by disposal. Contaminated absorbents, surplus product, etc. should be burned at an approved high-temperature incinerator (> 1 000°C) with effluent gas scrubbing. Where no incinerator is available, surplus product should be diluted and buried in a designated and approved landfill.

Container Disposal: Refer to the product label for instructions.

Empty containers retain vapour and product residues.

Triple rinse containers.

If the container is to be refilled, do not rinse with any material or introduce any pesticide other than this product. **DO NOT REUSE THE**

CONTAINER FOR ANY OTHER PURPOSE.

Do not transport if this container is damaged or leaking.

Combustible containers should be disposed of in an approved pesticide incinerators. Non – combustible containers should be triple-rinsed with water and then punctured and taken to a scrap metal facility for recycling or disposal in an approved landfill site.

Containers must be disposed of in accordance with the relevant local legislation. Prevent contamination of food, feedstuffs as well as eating utensils.

14) Transportation Information:

UN Number: 2903

Road transport ADR/RID

Class: 6.1

Packaging group: III

Shipping name: Pesticide, liquid, toxic, Flammable (Chlorpyrifos + Lambda cyhalothrin)

Air transport: ICAO / IATA

Class: 6.1

Packaging group: III

Shipping name: Pesticide, liquid, toxic, Flammable (Chlorpyrifos + Lambda cyhalothrin)

Maritime transport: IMDG

Class: 6.1

Packaging group: III

Shipping name: Pesticide, liquid, toxic, Flammable (Chlorpyrifos + Lambda cyhalothrin)

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC code): Not available

Special precautions: Flammable

MARINE POLLUTANT.

15) Regulatory Information:

Symbols: Xn - Harmful

Xi - Irritant

F - Flammable

Risk – Phrase:

R10 - Flammable.

R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed.

R36/37/38 - Irritating to eyes, respiratory system and skin.

R51 - Toxic to aquatic organisms.

R57 - Toxic to bees

Safety – Phrase:

- S1/2 - Keep locked up and out of reach of children.
- S 7 - Keep container tightly closed.
- S13 - Keep away from food, drink and animal feeding stuffs.
- S20/21 - When using, do not eat drink or smoke.
- S23 - Do not breathe vapour / spray.
- S24/25 - Avoid contact with the skin and eyes.
- S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S 28 - Avoid contact with skin, wash immediately with plenty of water and non-abrasive soap.
- S36/37/39 - Wear suitable protective clothing, gloves and eye / face protection.
- S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S46 - If swallowed, seek medical advice immediately and show this label.
- S57 - Use appropriate containment to avoid environmental contamination.
- S61 - Avoid release to the environment. Refer to special instructions / safety data sheets.

Hazard Statements

- H301 - Toxic if swallowed.
- H312 - Harmful in contact with skin.
- H313 - May be harmful in contact with skin.
- H315 - Causes skin irritation.
- H330 - Fatal if inhaled
- H302 - Harmful if swallowed
- H304 - May be fatal if swallowed and enters airways
- H313 - May be harmful in contact with skin
- H316 - Causes mild skin irritation
- H318 - Causes serious eye damage
- H330 - Fatal if inhaled
- H331 - Toxic if inhaled
- H400 - Very toxic to aquatic life
- H410 - Very toxic to aquatic life with long-lasting effects

Precautionary statements:

- P261 - Avoid breathing dust/fumes/gas/mist/vapours/spray. [As modified by IV ATP]
- P264 - Wash ... thoroughly after handling.
- P270 - Do not eat, drink or smoke when using this product.
- P271 - Use only outdoors or in a well-ventilated area.
- P273 - Contaminated work clothing should not be allowed out of the workplace.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection. [As modified by IV ATP]
- P301/310 - If swallowed immediately call a POISON CENTER / doctor.
- P304/340 - If inhaled remove person to fresh air and keep comfortable for breathing.
- P331 - Do NOT induce vomiting
- P391 - Collect spillage
- P405 - Store locked up
- P501 - Dispose of contents / container in accordance with local / regional / national / international regulation.

16. Other Information

All information and instructions provided in this Safety Data Sheet (SDS) are based on the current state of scientific and technical knowledge at the date indicated on the present SDS and are presented in good faith and believed to be correct.

This information applies to the product as such. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear.

It is the responsibility of persons in receipt of this SDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with this product. If the recipient subsequently produces formulation(s) containing this product, it is the recipient's sole responsibility to ensure the transfer of all relevant information from this SDS to their own SDS.

The information contained herein is provided in good faith but makes no representation as to its comprehensiveness or accuracy. A properly trained person using this product intends this document only as a guide to the appropriate handling of the material. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.

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