



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Nufarm Lambda-Cyhalothrin 1EC Insecticide
EPA Reg. No.: 228-708
Product Type: Insecticide

Company Name: Nufarm Americas Inc.
 11901 S. Austin Avenue
 Alsip, IL 60803
 1-800-345-3330

Telephone Numbers: For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
 Call CHEMTREC Day or Night: 1-800-424-9300
 For Medical Emergencies Only, Call 1-877-325-1840

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not exactly the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION

PHYSICAL HAZARDS:

Flammable liquid Category 2

HEALTH HAZARDS:

Acute toxicity, oral	Category 3
Skin irritation	Category 2
Eye irritation	Category 2B
Acute toxicity, inhalation	Category 3
Specific target organ toxicity – Repeat exposure	Category 2
Carcinogenicity	Category 2

ENVIRONMENTAL HAZARDS:

Hazardous to aquatic environment, acute	Category 1
Hazardous to aquatic environment, chronic	Category 1

SIGNAL WORD:

DANGER

HAZARD STATEMENTS:

Combustible liquid. Toxic if swallowed or inhaled. Causes skin irritation. Causes eye irritation. May cause drowsiness or dizziness. May cause respiratory tract irritation. May cause damage to organs (liver and central nervous system) through prolonged or repeated exposure. Suspected of causing cancer. Very toxic to aquatic life with long lasting effects.



PRECAUTIONARY STATEMENTS

Keep away from flames and hot surfaces. – No smoking. In case of fire: Use foam, carbon dioxide, dry chemical or water spray to extinguish. Store in a well-ventilated place. Keep cool.

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Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. If swallowed: Immediately call a poison center/doctor. Rinse mouth. Store locked up.

Avoid breathing mists/vapors/spray. Use only outdoors or in a well-ventilated area. If inhaled: Remove person to fresh air and keep comfortable for breathing. Keep container tightly closed.

If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

If inhaled: Remove victim to fresh air and keep comfortable for breathing. If inhaled: call poison center/doctor if you feel unwell.

Get medical advice/attention if you feel unwell.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. If exposed or concerned: Get medical advice/attention.

Avoid release to the environment. Collect spillage. Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Lambda-Cyhalothrin	91465-08-6	12.4 - 13.7
Solvent Naphtha (Petroleum), Heavy Aromatic (may contain)	64742-94-5	77.4 – 82.2
Naphthalene	91-20-3	<8.0
Pseudocumene (1,2,4-Trimethylbenzene)	95-63-6	<4.0

Synonyms: [1 α (S*), 3 α (Z)] – (\pm)-cyano-(3-phenoxyphenyl) methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2, 2-dimethylcyclopropanecarboxylate

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

If Swallowed: Call a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on Skin or Clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

Note to Physician: Contains petroleum distillate – vomiting may cause aspiration pneumonia.

Most important symptoms/effects, acute and delayed: Eye exposure may cause moderate irritation. Skin exposure may cause moderate irritation. Harmful if swallowed. Aspiration hazard – may be fatal if swallowed and enter airways.

Indication of immediate medical attention and special treatment if needed, if necessary: Respiratory distress, itchy skin, skin or eye irritation. Get immediate medical attention for ingestion.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Use extinguishing media suitable for surrounding materials. Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: Combustible liquid. Can release vapors that form explosive mixtures at temperatures at or above the flash point. Containers will burst from internal pressure under extreme fire conditions. If water is used to fight fire or cool containers, dike to prevent runoff contamination of municipal sewers and waterways.

Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as hydrogen chloride, hydrogen fluoride, and oxides of carbon and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

Methods for Cleanup and Disposal: Avoid creation of dusty conditions. If dry, sweep or scoop up material and place into container for disposal. If wet, pump any free liquid into an appropriate closed container. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

HANDLING:

Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. If pesticide gets on skin, wash immediately with soap and water. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE:

Store in original container and out of the reach of children, preferably in a locked storage area. Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:

Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

Personal Protective Equipment:

Eye/Face Protection: To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.

Skin Protection: To avoid contact with skin wear long sleeved shirt and long pants, socks, chemical resistant footwear and chemical resistant gloves. When mixing, loading, or cleaning equipment a chemical resistant apron must be worn. An emergency shower or water supply should be readily accessible to the work area.

Respiratory Protection: Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

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General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
Lambda-Cyhalothrin	NE	NE	NE	NE	
Naphthalene	10	NE	10 (skin)	NE	ppm
Pseudocumene (1,2,4-Trimethylbenzene)	25	NE	NE	NE	ppm

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Light yellow colored liquid
Odor:	Mild aromatic odor
Odor threshold:	No data available
pH:	5.50 (1% solution)
Flash point:	155° F (68° C) Boekel Closed Cup
Flammability (solid, gas):	No data available
Relative density:	0.924 g/cc @ 23° C and 0.913 g/cc 38° C
Solubility(ies):	Emulsifiable
Viscosity:	1.88 cP @ 23° C and 0.913 cP @ 38° C

Note: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

10. STABILITY AND REACTIVITY

Reactivity:

Chemical Stability: This material is stable under normal handling and storage conditions.

Possibility Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Avoid temperatures near or above flashpoint 155° F (68° C), open flame, spark and static electricity.

Incompatible Materials: Strong oxidizing agents: bases and acids.

Hazardous Decomposition Products: Under fire conditions may produce gases such as hydrogen chloride, hydrogen fluoride, and oxides of carbon and nitrogen.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Dermal

Symptoms of Exposure:

Eye Contact: May cause eye irritation. Vapors and mist may cause irritation.

Skin Contact: Minimally toxic and moderately irritating based on toxicity studies.

Ingestion: May be harmful if swallowed. The petroleum hydrocarbon component, if aspirated into the respiratory system during ingestion or vomiting may cause mild or severe pulmonary injury, possibly progressing to death.

Inhalation: Low inhalation toxicity. Overexposure to petroleum hydrocarbon component may cause irritation to respiratory tract, headaches, anesthesia, drowsiness, unconsciousness and other central nervous system effects, possibly including death.

Delayed, immediate and chronic effects of exposure: None reported

Toxicological Data:

Data from laboratory studies conducted on a similar, but not identical, formulation:

Oral: Rat LD₅₀: 92.90 mg/kg

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Dermal: Rat LD₅₀: > 2,000 mg/kg

Inhalation: Rat 4-hr LC₅₀: > 0.55 mg/L

Eye Irritation: Rabbit: Mildly irritating

Skin Irritation: Rabbit: Moderately irritating

Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: For Lambda-Cyhalothrin, contact with exposed skin may result in temporary itching, tingling, burning or numbness, called paresthesia. The symptoms normally disappear within 24 hours. Face and genital areas are especially susceptible to this effect. Paresthesia involving the face is also known as "subjective facial sensation" or SFS. Repeated overexposure to Lambda-Cyhalothrin may affect the liver and central nervous system.

Carcinogenicity / Chronic Health Effects: Prolonged overexposure to Lambda-Cyhalothrin may affect the liver. For Lambda-Cyhalothrin, no treatment-related tumors are reported in rats or mice. The hydrocarbon component may contain naphthalene, which is listed by IARC as a class 2B and the U.S. National Toxicology Program as reasonably anticipated to be a human carcinogen.

Reproductive Toxicity: In studies with animals, Lambda-Cyhalothrin was not a reproductive toxicant.

Developmental Toxicity: In studies with animals, Lambda-Cyhalothrin was not a reproductive toxicant.

Genotoxicity: In vitro (bacterial) and in vivo (animal tests) with Lambda-Cyhalothrin did not demonstrate mutagenic effects.

Assessment of Carcinogenicity:

This product contains substances that are considered to be probable or suspected human carcinogens as follows:

Component	Regulatory Agency Listing As Carcinogen			
	ACGIH	IARC	NTP	OSHA
Naphthalene	No	2B	Yes*	No

*Reasonably anticipated to be a human carcinogen

See Section 2: HAZARDS IDENTIFICATION for more information.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Lambda-Cyhalothrin:

96-hour LC ₅₀ Bluegill:	0.00021 ppm	Bobwhite Quail 8-day Dietary LD ₅₀	> 5,300 ppm
96-hour EC ₅₀ Rainbow Trout:	0.00021 ppm	Mallard Duck 8-day Dietary LC ₅₀ :	>3,948 ppm
48-hour EC ₅₀ Daphnia:	0.00036 ppm	Mallard Duck LC ₅₀	3,950 mg/kg
Honey Bee Oral LD ₅₀	0.038 µg/bee		

Environmental Fate:

Lambda-Cyhalothrin is moderately persistent in the soil. The reported half-lives range from 4 to 12 weeks. It shows a high affinity for soil with a reported K_{oc} of 180,000. Lambda-Cyhalothrin has extremely low water solubility and is tightly bound to soil.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Pesticide wastes may be acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Handling and Disposal:

Nonrefillable Containers 5 Gallons or Less: Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow

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begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

Nonrefillable containers larger than 5 gallons: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable containers larger than 5 gallons: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

OR

Refillable Container: Refill this container with pesticide only. Do not reuse this container for any other purpose. Close all openings and replace all caps. Contact Nufarm's Customer Service Department at 1-800-345-3330 to arrange for return of the empty refillable container.

14. TRANSPORTATION INFORMATION

Ok, Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this MSDS.

DOT

< 119 gallons per completed package

UN 3352, Pyrethroid pesticide, liquid, toxic, 6.1, II, (lambda cyhalothrin)

≥ 119 gallons and < 265 per completed package

UN 3352, Pyrethroid Pesticide, liquid, toxic, 6.1, (3), II, (lambda cyhalothrin), Marine Pollutant

≥ 265 gallons per completed package

UN 3352, Pyrethroid Pesticide, liquid, toxic, 6.1, (3), II, (lambda cyhalothrin), (Naphthalene), Marine Pollutant, RQ

IMDG

UN 3352, Pyrethroid pesticide, liquid, toxic, 6.1, II, (lambda cyhalothrin), Marine Pollutant

IATA

UN 3352, Pyrethroid pesticide, liquid, toxic, 6.1, II, (lambda cyhalothrin)

15. REGULATORY INFORMATION

EPA FIFRA INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace

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labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

WARNING. May be fatal if swallowed. Causes moderate eye irritation. Causes skin irritation. Harmful if absorbed through skin or inhaled. Remove and wash contaminated clothing before reuse.

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Skin exposure may also result in a sensation described as tingling, itching, burning, or prickly feeling. Onset may occur immediately to 4 hours after exposure and may last 2 to 30 hours, without damage. Wash exposed areas once with soap and water. Relief from the skin sensation may be obtained by applying an oil-based cream.

U.S. FEDERAL REGULATIONS

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:

Hazard Categories under Criteria of SARA Title III Rules (40 CFR Part 370.66):

Immediate, Delayed and Fire

Section 313 Toxic Chemical(s):

Naphthalene (CAS No. 91-20-3), < 8% by weight in product

1,2,4-Trimethylbenzene (CAS No. 95-63-6), < 4% by weight in product

Reportable Quantity (RQ) under U.S. CERCLA:


Naphthalene (CAS No. 91-20-3) 100 pounds

RCRA Waste Code:

Naphthalene (CAS No. 91-20-3) U165

State Information:

Other state regulations may apply. Check individual state requirements.

California Proposition 65:  **ATTENTION.** This product can expose you to chemicals including naphthalene which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Hazard Rating:

Rating for this product: Health: 2 Flammability: 2 Reactivity: 0

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes

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