

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****Product Name:** Kaiso™ 24WG Insecticide**EPA Reg. No.:** 228-526**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 the same as the FIFRA label. Certain sections of this SDS are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION**HEALTH HAZARDS:**

Acute toxicity, oral	Category 4
Acute toxicity, inhalation	Category 4
Skin irritation	Category 2
Sensitization, skin	Category 1B
Eye irritation	Category 2B
Specific target organ toxicity – Repeat exposure	Category 2

ENVIRONMENTAL HAZARDS:

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

SIGNAL WORD:

WARNING

HAZARD STATEMENTS:

Harmful if swallowed or inhaled. Causes skin irritation. May cause an allergic skin reaction. Causes eye irritation. May cause damage to organs (kidneys, liver, and central nervous system) through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.

**PRECAUTIONARY STATEMENTS:**

Wash hands and exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. Dispose of contents/container in accordance with local/regional/national/international regulations.

Avoid breathing dust/spray. Use only outdoors or in well-ventilated area. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.

Wear protective gloves. 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.

Contaminated work clothing must not be allowed out of the workplace. If skin irritation or rash occurs: Get medical advice/attention.

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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.

Avoid release to the environment. Collect spillage.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Lambda-Cyhalothrin	91465-08-6	23.3 – 24.7
N-Methyl pyrrolidone	872-50-4	1.9 – 2.1
Hydrous magnesium silicate	14807-96-6	3 – 3.3
Calcium dodecylbenzenesulfonate	26264-06-2	1.3 – 1.5
Acetic acid	64-19-7	0.35 – 0.45
Solvent naphtha (petroleum), heavy aromatic	64742-94-5	7.1 – 7.9
Other Ingredients	Trade Secret	Trade Secret

Synonyms: Lambda-Cyhalothrin: [1 α (S*), 3 α (Z)] – (±)-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. Have person sip a glass of water if able to swallow. 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.

Most Important symptoms/effects, acute and delayed: Brief skin exposure may cause moderate irritation. Prolonged exposure or overexposure may cause paresthesia (rash, tingling, numb, or burning sensation) which is characteristic of overexposure of the skin to pyrethroid insecticides. Dermal absorption is typically minimal. Systemic intoxication resulting from overexposure to the skin is not expected. Eye exposure may cause mild irritation. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.

Indication of immediate medical attention and special treatment if needed, if necessary: Seek immediate medical attention for overexposure resulting in stupor, rapid breathing and heartbeat, profuse sweating and/or seizures

5. FIRE FIGHTING MEASURES

Flash Point: Not applicable (solid, non-flammable)

Extinguishing Media: 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: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

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.

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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: If dry, sweep or scoop up material and place into container for disposal. If wet, pump any free liquid into an appropriate closed container. Collect washings for disposal. 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:

Do not get in eyes. Wear protective eyewear such as goggles, face shield, or safety glasses. Avoid contact with eyes, skin and clothing. 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. Remove Personal Protective Equipment (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 containers only. Keep container closed when not in use. Do not store near food or feed. In case of spill or leak on floor or paved surfaces, soak up with sand, earth, or synthetic absorbent. Remove to chemical waste area.

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 face shield, goggles or safety glasses with front, brow and temple protection. 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, shoes, socks, and chemical-resistant gloves such as barrier laminate or viton ≥ 14 mils. An emergency shower or water supply should be readily accessible to the work area.

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

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	
Dry carrier (as nuisance dust)*	15 (T) 5 (R)	NE	NE	NE	mg/m ³
N-methyl pyrrolidone**	NE	NE	NE	NE	
Hydrous magnesium silicate	20 mppcc	NE	2 mg/m ³	NE	
Acetic acid	10	NE	10	15	ppm
Solvent naphtha (petroleum), heavy Aromatic	NE	NE	NE	NE	

* Although this formulation is designed to be non-dusty, a small amount of dust may be present due to storage and handling.

**California OSHA PEL: 1 ppm, AIHA WEEL: 10 ppm

T = Total Dust

R = Respirable Fraction

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Tan, free-flowing granules
Odor:	Acid like odor
Odor threshold:	No data available
pH:	4.31 (1% w/w solution in DIW)
Melting point/freezing point:	No data available
Initial boiling point and boiling range	No data available
Flash point:	No data available
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Relative density:	0.68 g/cc (tap)
Solubility(ies):	No data available
Partition coefficient: n-octanol/water:	No data available
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available

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: Not reactive.

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

Possibility Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Excessive heat. Do not store near heat or flame.

Incompatible Materials: Not known.

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

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, eye and skin contact.

Symptoms of Exposure: Skin contact causes moderate irritation. Overexposure to the skin may produce skin sensations such as rash, numbness, burning or tingling. These skin sensations are reversible and usually subside within 12 hours. Causes moderate eye irritation. Systemic effects are not expected from skin exposure.

Overexposure (inhalation or ingestion) may result in tremors, convulsions, incoordination, decreased locomotion and nasal discharge, including bleeding. May include tremors, convulsions, incoordination, decreased locomotion and nasal discharge, including bleeding. In addition, 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.

Delayed, immediate and chronic effects of exposure: Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Toxicological Data:

Oral, Rat LD₅₀: 310.2 mg/kg

Dermal, Rat or Rabbit LD₅₀: >5,000 mg/kg

Inhalation, Rat 4-hr LC₅₀: >2.84 mg/l

Eye Irritation, Rabbit: Moderately irritating

Skin Irritation, Rabbit: Moderately irritating

Skin Sensitization, Guinea Pig: Sensitizing

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 effect the

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liver and central nervous system. Repeated overexposure to N-Methyl 2-pyrrolidinone (NMP) may cause effects to eyes, skin, respiratory system, central nervous system, liver and kidneys.

Carcinogenicity / Chronic Health Effects: Prolonged overexposure to Lambda-Cyhalothrin may effect the liver. For Lambda-Cyhalothrin, no treatment-related tumors in rats or mice. No increase in tumors was seen in rats via dietary or inhalation exposure to NMP for two years; however, an increase in liver tumors was noted in mice receiving high dietary doses over a similar period. Liver tumors are not uncommon when non-genotoxic chemicals such as NMP are tested in the mouse bioassay.

Reproductive Toxicity: In studies with animals, Lambda-Cyhalothrin was not a reproductive toxicant. NMP may adversely affect reproduction in rats after ingestion, although fertility is unaltered.

Developmental Toxicity: In studies with animals, Lambda-Cyhalothrin was not a development toxicant. Fetal developmental effects were observed following ingestion, inhalation and dermal exposures to NMP in pregnant animals, and occurred both in the presence and absence of maternal toxicity.

Genotoxicity: Animal tests with Lambda-Cyhalothrin did not demonstrate mutagenic effects. Neither *in vitro* nor *in vivo* tests on NMP demonstrated mutagenic effects.

Assessment Carcinogenicity: None listed with ACGIH, IARC, NTP or OSHA.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Lambda-Cyhalothrin

96-hour LC ₅₀ Bluegill:	0.00021 ppm	Bobwhite Quail 8-day Dietary LC ₅₀ :	>5,300 ppm
96-hour LC ₅₀ Rainbow Trout:	0.00024 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 Koc of 180,000. Lambda-Cyhalothrin has extremely low water solubility and is tightly bound to soil.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Pesticide wastes are 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 container. Do not reuse or refill this container. 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 begins to drip. Repeat this procedure two more times. Then offer for recycling if available 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.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this SDS.

DOT

Not regulated by DOT unless shipped by water. See IMO / IMDG description.

IMO / IMDG

ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. ,
(LAMBDA-CYHALOTHRIN, 24%), 9, UN3077, III, MARINE POLLUTANT.

IATA

Not regulated

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 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 substantial but temporary eye injury. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals. Remove and wash contaminated clothing before reuse. Skin exposure may also result in a sensation described as a 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):**

Immediate and Delayed

Section 313 Toxic Chemical(s):

N-Methyl-2-pyrrolidinone (CAS No. 872-50-4), 1.9 – 2.1% by weight in product

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

Calcium dodecylbenzenesulfonate (26264-06-2) – 1,000 lb

Acetic acid (64-19-7) – 5,000 lb

RCRA Waste Code:

None

State Information:

Other state regulations may apply. Check individual state requirements.

California Proposition 65: WARNING. This product contains the chemical N-Methyl pyrrolidone which is known to the State of California to cause birth defects or other reproductive harm.

16. OTHER INFORMATION**National Fire Protection Association (NFPA) Hazard Rating:**

Rating for this product: Health: 3 Flammability: 1 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 prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

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