

**Material Safety Data Sheet**

**Thiodiazole copper 18% + Kasugamycin 2% SC**

**1. PRODUCT IDENTIFICATION/COMPANY IDENTIFICATION**

Product Name: Thiodiazole copper 18% + Kasugamycin 2% SC  
 Common Name: Thiodiazole copper + Kasugamycin  
 ChemicalName: 2-amino-5-mercapto-1,3,4-thiadiazole copper  
 (Thiodiazole copper)  
 [5-amino-2-methyl-6-(2,3,4,5,6-pentahydroxycyclohexyloxy)tetrahydropyran-3-yl]amino- $\alpha$ -iminoacetic acid(Kasugamycin)  
 Chemical Family: Azole(Thiodiazole copper)  
 hexopyranosyl antibiotic(Kasugamycin)  
 Chemical Formula: C<sub>4</sub>H<sub>4</sub>N<sub>6</sub>S<sub>4</sub>Cu(Thiodiazole copper)  
 C<sub>14</sub>H<sub>25</sub>N<sub>3</sub>O<sub>9</sub>(Kasugamycin)  
 CAS No.: 3234-61-5(Thiodiazole copper)  
 6980 - 18 - 3(Kasugamycin)  
 Product Use: Fungicide

**2. COMPANY IDENTIFICATION**

**Exporter:**

CHICO CROP SCIENCE CO., LTD.

Add: Rm 903, Unit C, Tian An International Bldg., Renmin South Rd., Shenzhen, China.

Tel: 86-755-22969199 Fax: 86-755-25919993

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Ingredient Name</u>	<u>CAS Registry Number</u>	<u>Typical Wt. % w/w</u>
Thiodiazole copper	3234-61-5	18
Kasugamycin	6980 - 18 - 3	2
Inert	-	to 100%

**4. HAZARDS IDENTIFICATION**

**Emergency Overview**

yellow-green flowable liquid with not distinct odor.

CAUTION!  
KEEP OUT OF REACH OF CHILDREN  
MAY CAUSE EYE AND SKIN IRRITATION  
MAY CAUSE ALLERGIC SKIN REACTION.

## Potential Health effects

Dermal contact, ingest and inhalation of the product are the primary routes to induce potential adverse health effects. Inhalation of aerosol during application of the product as part of its end use is another potential route of entry. Eye and skin irritation may occur from contact with the liquid or spray mixture.

## 5. FIRST AID MEASURES

- If swallowed: Do not induce vomiting by yourself. Gargle thoroughly with water and bring pesticide labels to the hospital.
- If in eye: Immediately rinse eyes with a large amount of running water. Hold eyelids apart to rinse the advice of a physician.
- If on skin: Remove contaminated clothing. Wash with plenty of soap and water, including hair and under fingernails. Do not apply any medicating agents except on the advice of a physician.
- If Inhaled: Move victim from contaminated area to fresh air. Apply artificial respiration if necessary.
- Notes to Physician: There is no specific antidote, treat symptomatically.

## 6. FIRE FIGHTING MEASURES

### Fire and explosive Properties

- Auto-Ignition Temperature Not applicable  
Flash Point Not available, the solvent is water.

### Extinguishing Media

Water fog, Carbon Dioxide, Dry Chemical, Foam.

### Fire Fighting Instructions

The product is not flammable. But if firing, fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear and self-contained breathing apparatus. Fire fighting equipment should be thoroughly decontaminated after use. Person who may have been exposed to contaminated smoke should be immediately examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.

## 7. ACCIDENTAL RELEASE MEASURES

### **In case of Spill or Leak**

Stop the leak, if possible. Ventilate the space involved. Absorb, sweep up, place in container for disposal. Shut off or remove all ignition sources. Prevent waterway contamination. Construct a dike to prevent spreading. Protect works with water spray. Collect run-off water and transfer to drums or tanks for later disposal.

## 8. HANDLING AND STORAGE

### **Handling**

Harmful if swallowed, inhaled, or absorbed through the skin. Causes eye irritation. Do not breathe gas or allow to get in eyes, on skin, or on clothing. Wash hands, arm and face thoroughly with soap and warm water after use and before eating or smoking. Wash all contaminated clothing with soap and hot water before reuse. Do not contaminate feed or food items. Keep out of reach of children.

### **Storage**

This product should be stored in a cool, dry, ventilated, rainproof place. Keep the container closed; Keep away from heat or fire. Keep it out of reach of children, irrelevant personnel and animals and lock it. It cannot be stored with food, beverage, grain and fodder.

## 9. EXPOSURE CONTROLS/PERSONAL PROTECTION

### **Eye/Face Protection**

Goggles and full face shield should be used when needed to prevent liquid from face and getting into the eyes.

### **Skin Protection**

Avoid skin contact. Use chemical-resistant gloves, and wear long sleeves and trousers to prevent dermal exposure.

### **Respiratory Protection**

Under normal handling conditions no respiratory protection is needed. However, if needed to prevent respiratory irritation, either a respirator approved for dusts and mists, or one approved for pesticides.

## 10. PHYSICAL AND CHEMICAL PROPERTIES

Color:	yellow-green
Physical state:	liquid
Odor:	not distinct odor.
Melting point:	300°C(Thiodiazole copper) 202–204 °C (decomp.)(kasugamycin hydrochloride hydrate)

Vapor pressure:	N/A(Thiodiazole copper) <math>1.3 \times 10^{-2}</math> mPa (25 °C) (kasugamycin hydrochloride hydrate)
Solubility in water:	It is indissoluble in water.(Thiodiazole copper) In water 207 (pH 5), 228 (pH 7), 438 (pH 9) (all in g/l, 25 °C).(kasugamycin hydrochloride hydrate)
Solubility in organic solvents:	It is indissoluble in most of organic solvents, and slightly dissolves in dimethylformamide.(Thiodiazole copper) In methanol 2.76, acetone, xylene <math><1</math> (all in mg/kg, 25 °C).(kasugamycin hydrochloride hydrate)
Partition coefficient:	N/A(Thiodiazole copper) Kow logP <math><1.96</math> (pH 5, 23 °C) (kasugamycin hydrochloride hydrate)

## 11. STABILITY AND REACTIVITY

### Stability

Stable in 54±2 °C and below 0 °C, decomposition in strong alkali, stable in acid.

### Hazardous Polymerization

Does not occur

### Incompatibility

This product is incompatibility with strong alkali pesticides.

### Hazardous Decomposition Products

Not available

## 12. TOXICOLOGICAL INFORMATION

<b>Acute Oral:</b>	Acute oral LD <sub>50</sub> for rats is greater than 2000 mg/kg. (Thiodiazole copper) Acute oral LD <sub>50</sub> for male rats >5000 mg/kg. (kasugamycin hydrochloride hydrate)
<b>Acute Dermal:</b>	Acute percutaneous LD <sub>50</sub> for rats > 2000mg/kg. (Thiodiazole copper) Acute percutaneous LD <sub>50</sub> for rabbits >2000 mg/kg. (kasugamycin hydrochloride hydrate)
<b>Irritation:</b>	Non-irritating to skin (rabbits). Mild irritation to eyes (rabbits). (Thiodiazole copper) Non-irritating to eyes and skin (rabbits).

- Sensitization:** (kasugamycin hydrochloride hydrate)  
Not a skin sensitiser.(Thiodiazole copper)
- Long-term Studies:** Not a skin sensitiser.(kasugamycin hydrochloride hydrate)  
Studies showed no evidence of carcinogenicity and mutagenicity to rats and rabbits.(Thiodiazole copper)  
Non-mutagenic and non-teratogenic in rats, and without effect on reproduction.(kasugamycin hydrochloride hydrate)

## 13. ECOLOGICAL INFORMATION

### Ecotoxicological Information

#### Thiodiazole copper

- Bees:** Acute contact toxicity for bees is non-toxic in 48hours.(LD<sub>50</sub> >100µg a.i./bee.)
- Effect on Birds:** LD<sub>50</sub> for the Bobwhite quail is more than 2000mg/kg bodyweight.  
LD<sub>50</sub> for the Mallard ducks is more than 2000mg/kg bodyweight.
- Effects on Fish:** It is safe to common carp. Acute LC<sub>50</sub> (96h) >100 mg/l.

#### Kasugamycin hydrochloride hydrate

- Effects on Birds:** Acute oral LD<sub>50</sub> for male Japanese quail >4000 mg/kg.
- Effects on Fish:** LC<sub>50</sub> (48 h) for carp and goldfish >40 mg/l.
- Daphnia:** LC<sub>50</sub> (6 h) >40 mg/l.
- Bees:** LD<sub>50</sub> (contact) >40µg/bee.

### Environment Fate Information:

#### Animals:

Thiodiazole copper is safe to animals.(Thiodiazole copper)

Kasugamycin hydrochloride hydrate, orally administered to rabbits, was mostly excreted in the urine within 24 hours. When injected intravenously to dogs, it was mostly excreted within 8 hours. After oral administration to rats at 200 mg/kg, no residues were detected in eleven organs or blood; 96% of administered dose remained in the digestive tract 1 hour after administration.(kasugamycin)

#### Plants:

No degradation product were detected in the samples which were sprayed more than 7 days before the harvest time. Detection of rice after large area use: except for some brown rice samples with traces, other brown rice samples were not detected.(Thiodiazole copper)

Degraded to kasugamycinic acid and kasuganobiosamine; finally degraded to ammonia, oxalic acid, CO<sub>2</sub> and water.(kasugamycin)

#### Soil/Environment:

No pollution to the environment.(Thiodiazole copper)

Degradation proceeds as in plants.(kasugamycin)

## 14. DISPOSAL CONSIDERATIONS

### Waste Disposal

Pesticide wastes are acutely hazardous. Do not reuse product containers. Dispose product containers, waste containers, residues according local health and environmental regulations.

## 15. TRANSPORT INFORMATION

N/A

## 16. REGULATORY INFORMATION

Risk phrases: Harmful if Swallowed ;

Safety phrases: Keep out of reach of children.

## 17. OTHER INFORMATION

The information contained herein relates only to the specific material identified. We believe that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, express or implied, is made as to the reliability or completeness of the information. Urge persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

Chico Crop Science Co., Ltd.