



**Hangzhou Tianlong Biotechnology Co., Ltd.**

Add: Room 1906, Fengqi Times Tower, No.338, Fengqi East Road, Hangzhou, Zhejiang, China.

## MATERIAL SAFETY DATA SHEET

### 1. Chemical Product and company Identification

Product Name: ziram

Molecular Formula:  $C_6H_{12}N_2S_4Zn$

Molecular Weight: 305.8

Structural Formula:



Chemical Name: (T-4)-bis (dimethylcarbamodithioato- S, S') zinc

CAS No.: 137-30-4

Supplier: HANZHOU TIANLONG BIOTECHNOLOGY CO., LTD

Address: Room 1906, Fengqi Times Tower, No.338 Fengqi East Road, Hangzhou, China, 310020

Tel: 0086-571-87214516

Fax: 0086-571-87079476

### 2. Composition / Information On Ingredients

Composition	CAS No.	Content %
ziram	137-30-4	98.0
Other ingredients		2.0

### 3. Hazards Identification

Emergency overview: Causes irreversible eye damage. Harmful by inhalation, in contact with skin and if swallowed. May be fatal if inhaled.

Potential health effects:

Eyes: Severly irritating to the eyes. Causes irreversible eye damage.

Skin: May cause mild skin irritation.

Inhalation: Toxic by inhalation. Prolonged inhalation may cause visual disturbances. Irritating to respiratory system.

Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

### 4. First Aid Measures

If swallowed: Rinse mouth. Refer for medical attention.

If in inhalation: Fresh air rest. Refer for medical attention.

If on skin: Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.

If in eyes: First rinse with plenty of water for several minutes (remove contact lenses if easily possible) then take to a doctor.

## 5. Fire-Fighting Measures

Extinguishing Media: Carbon dioxide, dry chemical powder, foam, water.

Special Fire Fighting Equipment: Wear a self-contained breathing apparatus and protective clothing.

Hazardous combustion products: Carbon disulfide, sulfur dioxide.

## 6. Accidental Release Measures

Personal Precautions: Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves. Avoid contact with the skin and the eyes.

Environmental precautions: Consult a regulatory specialist to determine appropriate state or local reporting requirements, requirements listed in pertinent environmental permits.

Do not flush into surface water or sanitary sewer system.

Spill Clean-up Methods: Provide adequate ventilation. Carefully absorb on vermiculite and transfer to a closed container.

## 7. Handling and Storage

Handling: Use only in a well-ventilated area. Minimize dust generation and accumulation.

Storage: Keep away from food, feed and drinking water. Store in a well-ventilated, dry place away from heat and moisture.

## 8. Exposure Controls / Personal Protection

Respiratory Protection: Self-contained breathing apparatus or chemical cartridge.

Hand Protection: Chemical-resistant gloves, solvent-resistant gloves.

Eye Protection: Wear safety goggles.

Other Protective Equipment: Protective clothing.

Other Protective Measures: Provide safety showers and eyewash station near workplace.

## 9. Physical and Chemical Properties

Appearance: White powder with odorless

Melting point: 240-246 °C

Specific gravity: 1.66 @25°C

Vapor pressure : <1

Solubility : in water 65mg/L@20°C

In organic solvent : Soluble in chloroform, carbon disulfide, dilute alkali, moderately soluble in acetone, insoluble in ethanol and aether

## 10. Stability and Reactivity

Chemical stability: Stable

Incompatible with iron, copper, strong oxidizing agents, acids, mercury

Conditions to avoid: Avoid exposure to excessive heat

Hazardous decomposition products: Oxides of sulfur.

Hazardous polymerization: Products will not undergo polymerization.

## 11. Toxicological Information

Acute Toxicity:

Oral LD50 (rat): 1400 mg/kg Dermal

LD50 (rat): >6000mg/kg Inhalation

LC50 (rat): not applicable

Skin irritation (rabbit): Moderate

Eye irritation (rabbit): Moderate

Reproductive effects: When female and male rats were given moderate doses of ziram (50 mg/kg/day) for nearly 2 months prior to pregnancy, the rats had marked reductions in fertility and litter size. The rats in this study became largely sterile. A lower dose of 10 mg/kg had no effect on reproduction. Female mice fed moderate doses (50 mg/kg/day) of ziram for 15 days exhibited reduced fertility but no effects on fertility appeared in male mice. Wasting away of the testes has been noted as a toxic effect of ziram. Based on these data, reproductive effects in humans are unlikely at normal levels of exposure.

Teratogenic effects: Pregnant rats administered ziram at doses of 12.5 to 100 mg/kg/day during the organ forming period of pregnancy showed embryotoxic effects at doses of 25 mg/kg/day and greater. The compound also had a slight growth inhibiting effect on the embryos at 100 mg/kg. Maternal toxicity was observed at all test levels. No teratogenic effects were observed.

Mutagenic effects: Numerous tests have established that ziram is mutagenic. For example, there was an increase in the number of chromosome changes in bone marrow cells in mice treated with oral doses of 100 mg/kg/day. Chromosomal changes have also been observed in workers exposed to the compound in industrial settings for 3 to 5 years. The concentration in the air averaged 1.95 mg/L but reached as high as 71.3 mg/L in some of these cases. Thus, there is a risk to humans chronically exposed to ziram at moderate to high concentrations.

Carcinogenic effects: A carcinogenicity study was performed on rats and mice exposed to ziram for a 103-week period. Under the conditions of the study, ziram was carcinogenic to male rats, causing an increase in thyroid cancer. There was no increase in carcinogenicity in female rats or in male mice. Female mice showed an increase in lung tumors, but this was complicated by a virus infection making interpretation difficult. Ziram's carcinogenicity is not determinable from current evidence.

Organ toxicity: The primary target organ is the thyroid, as shown in a study of workers who experienced thyroid enlargement after ziram exposure.

## **12. Ecological Information**

Effects on birds: Toxicity of ziram to birds will vary from essentially non-toxic to moderately toxic. Its LD50 is 100 mg/kg in European starlings and red-wing blackbirds. In a 2-year study, the dietary LC50 in quail was 3346 ppm. In chickens, doses of 56 mg/kg were toxic. Ziram has an antifertility action in laying hens. When given to chickens under unspecified conditions, there were adverse effects on body weight and retarded testicular development.

Effects on aquatic organisms: Based on data from only one species, the goldfish, the compound appears to be moderately toxic to fish. The 5-hour LC50 for ziram in goldfish

was between 5 and 10 mg/L. Based on its low solubility in water, ziram should have a low bioconcentration potential.

Effects on other organisms: No data are currently available.

### **13. Disposal Considerations**

Dispose of according to the local regulations.

### **14. Transport Information**

UN Hazard Class: 6.1

UN Pack Group: II

UN no.:2811

Do not transport with food and. feedstuffs

### **15. Regulatory Information**

Safety Phrases: Keep out of reach of children

Keep away from food, drink and animal feeding stuff

Do not breathe spray

When using do not eat, drink or smoke

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

In case of accident or if you feel unwell, seek medical advice immediately (Show the label where possible)

Use appropriate containment to avoid environmental contamination

### **16. Other Information**

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS 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 on receipt of this MSDS 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 the product. If the recipient subsequently produce formulations containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.