



## MATERIAL SAFETY DATA SHEET

### Manufacturer/information service:

ZHEJIANG RAYFULL CHEMICALS CO., LTD

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### 1. Chemical Product Identification

Product Name: Thiram 98% TC

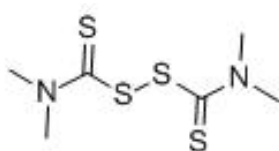
Molecular Formula: C<sub>6</sub>H<sub>12</sub>N<sub>2</sub>S<sub>4</sub>

Molecular Weight: 240.43 g/mol

Chemical Name: tetramethylthiuram disulfide

CAS number: 137-26-8

Structural name:



Form: Crystalline powder

Colour: White

Odour: Characteristic odor

### 2. Composition / Information On Ingredients

Composition	CAS No.	Content %
Thiram	137-26-8	98.0
Other ingredients	--	2.0

### 3. Hazards Identification

EMERGENCY OVERVIEW



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Signal Word: WARNING!

Harmful by inhalation and if swallowed!

Inhalation and ingestion may cause alcohol intolerance (Antabuse Effect).

Irritating to eyes, respiratory system and skin.

Harmful: danger of serious damage to health by prolonged exposure if swallowed.

Toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.

#### POTENTIAL HEALTH EFFECTS

Inhalation: Exposure to dust particles generated from this material may cause irritation of the respiratory tract. Inhalation may cause alcohol intolerance.

Ingestion: May cause alcohol intolerance (Antabuse Effect). May cause headache, dizziness, nausea, vomiting and gastrointestinal irritation.

Skin contact: May cause an allergic skin reaction. May be absorbed through the skin and produce effects similar to those caused by inhalation and/or ingestion.

Eye Contact: Causes mild eye irritation. Signs/symptoms can include redness, swelling, pain and tearing.

#### 4. First Aid Measures

Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate attention.

Ingestion: If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Skin: Immediately flush skin with plenty of water and soap for at least 15 minutes and get medical attention if irritation persists. Remove contaminated clothing and launder before reuse.

Eyes: Immediately flush with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Note to Physician Treat symptomatically. Exposure by ingestion, inhalation or skin absorption may cause alcohol intolerance (Antabuse Effect).

#### 5. Fire-Fighting Measures

Flammability: Not highly flammable.

Flash Point: 280°F / 138°C.

Flash Point Method: Pensky-Martens Open Cup.



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DOT Category: RQ, UN 3077, Environmentally Hazardous Substance, Solid, N.O.S., (Tetramethylthiuram Disulfide), 9, III.

Extinguishing Media: Use water fog, carbon dioxide, foam or dry chemical.

Auto Ignition Temperature: Not expected to self ignite.

Special Fire Fighting Procedures: Fight fire from a safe distance and from a protected location. Use water spray to cool fire exposed surfaces. Decomposition in fire may produce toxic gases. Do not allow runoff to enter waterways.

Special Protective Equipment: Full protective clothing and approved self-contained breathing apparatus required for fire-fighting personnel.

Unusual Fire and Explosion Hazards: Toxic emissions may result if product is involved in a fire.

## 6. Accidental Release Measures

Procedures: Isolate the area. Turn off/remove all potential sources of ignition. Work only with non-sparking tools and equipment. Wear gloves.

Clean up Methods: Scoop up and remove solids. Place spilled material in a closable container for hazardous waste disposal. Do NOT spread spilled product with water.

## 7. Handling And Storage

Handling: Avoid contact with eyes, skin and clothing. Avoid generation of breathing dust. Wash thoroughly with soap and water after handling. Wash hands before eating, drinking, chewing of gum, using tobacco or using the toilet. Reclose containers of unused product. Keep containers tightly closed when not in use. Do not reuse this container.

Storage: Store closed containers in a cool, dry, well-ventilated area. Store away from strong oxidizing materials. Avoid exposure to direct sunlight.

## 8. Exposure Controls/Personal Protection

Engineering Controls: Avoid dust generation. Ensure good ventilation and local exhaustion of the working area as necessary to control any air contaminants to within their exposure limits. Eliminate ignition sources.

Respiratory: Use in a well-ventilated area. Use approved NIOSH respiratory protection if TLV exceeded or if overexposure is likely. Appropriate respiratory protection shall be worn when applied engineering controls are not adequate to protect against inhalation exposure.



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Eyes: Wear safety glasses or goggles to protect against exposure.

Skin: Normal work coveralls. Launder contaminated clothing before reuse.

Gloves: Use gloves as a standard industrial handling procedure. Appropriate chemical resistant gloves should be worn.

## 9. Physical And Chemical Properties

Appearance: White powder

Odour: Characteristic odor

Bulk density/Specific gravity: 1.36 g/mL

Melting point: 145°C

Degradation point: 165°C

pH: 6.0-8.0

Partition Coefficient: 1.73 at 20°C

Vapour pressure:  $2.3 \times 10^{-3}$  Pa(25°C)

Solubility: 18mg/L in water(25°C), solubility in ethanol <10 g/L at 25°C, acetone 80 g/L at 25°C, chloroform 230 g/L at 25°C, hexane 0.04 g/L at 20°C; dichloromethane 170 g/L at 20°C, toluene 18 g/L at 20°C, isopropanol 0.7 g/L at 20°C.

## 10. Stability And Reactivity

Chemical Stability: This material is stable when stored at room temperature in closed, original container. Stable under normal conditions of handling, use and transportation.

Conditions to avoid: Keep away from heat, sparks, flame and exposure to heat and humidity.

Incompatibility: Avoid contact with acidic, basic or oxidizing agents.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Carbon monoxide, Oxides of nitrogen and sulphur.

## 11. Toxicological Information

Acute oral LD<sub>50</sub> (rat): > 1800 mg/kg

Acute dermal LD<sub>50</sub> (rat): >2000 mg/kg

Acute inhalation LC<sub>50</sub> (rat, 4h): 3.46 mg/L

Eye Contact: Slightly-irritating (Rabbit)

Skin Contact: Moderately irritating (Rabbit)

Skin Sensitization: May cause sensitisation by skin contact (Guinea Pig)



## 12. Ecological And Ecotoxicological Information

Effect on birds: moderate toxicity to birds, acute LD50 for Bobwhites quail is >930 a.i.mg/kg.

Effect on fish: moderate toxicity to fish, acute 96 hour LC50 for Rainbow trout is 0.171 a.i.mg/L.

Effect on aquatic invertebrates: moderate toxicity to aquatic invertebrates, acute 48 hour EC50 for Daphnia magna is 0.139 a.i.mg/L.

Effect on algae: moderate toxicity to algae, acute 72 hour EC50 is >0.141 a.i.mg/L.

Effect on honeybees: low toxicity to honeybees, contact acute 48 hour LD50 is >100 a.i.µg/bee, Oral acute 48 hour LD50 is >106.8 a.i.µg/bee.

Effect on earthworms: moderate toxicity to earthworms, acute 14 day LC50 is 540 a.i.mg/kg.

## 13. Disposal Considerations

Waste Disposal: This product, if disposed as received, is a listed hazardous waste. Bury in a licensed landfill or burn in an approved incinerator according to federal, state and local regulations. Treatment, storage, reuse and disposal of the waste material must conform to all applicable federal, state and local laws and regulations.

Contaminated Packaging: This bag may contain residue of a hazardous material. Some authorities may regulate such containers as hazardous waste. Dispose of container according to national or local regulations.

## 14. Transport Information

Not applicable.

## 15. Regulatory Information

Not applicable.

## 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



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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.