Materials Safety Data Sheet

Copper Zinc Tin Sulfur (CZTS) Powder

1. Product and Company Identification

Product Name: Copper Zinc Tin Sulfur (CZTS)
Formula: Cu_2ZnSnS_4
CAS: 12158-89-3
EC No.: N/A
Synonyms: None

Recommended Use: Laboratory chemicals, Scientific research
Uses advised against: No data available.

Supplier: UltraPurMat Group Co., Ltd
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2. Hazards Identification

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 (CLP)
The substance is not classified as hazardous

GHS Label elements, including precautionary statements
Pictogram: None
Signal Word: None
Hazard statement(s): None
Precautionary Statement(s): None

Other hazards: No additional hazards identified based on available information.

3. Composition

Components	CAS	Classification (H)	Concentration
Copper Zinc Tin Sulfur (Cu_2ZnSnS_4)	12158-89-3	Not classified	≤100%

4. First Aid Procedures

Description of first aid measures

General Treatment: If symptoms persist, call a physician.

Inhalation: Remove victim to fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

Ingestion: Clean mouth. Seek medical attention if you feel unwell.

Skin: Take off immediately all contaminated clothing. Rinse skin with water/shower. Seek medical attention.

Eyes: Rinse with pure water for at least 15 minutes. Remove contact lenses, if present and easy to do. Seek medical attention.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects, both acute and delayed, are included on labelling (Section 2) and in Section 11.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Be aware that symptoms may be delayed.

5. Firefighting Measures

Extinguishing Media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media: N/A

Special hazards arising from the substance or mixture

Copper,copper oxides, zinc,zinc oxides, tin,tin oxides, sulfur,sulfur oxides. Ambient fires may release harmful vapors.

Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Fight fire from a safe distance and with adequate protection. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately.

Further information

Standard procedure for chemical fires.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Remove persons to safety. Use personal protective equipment as required. Avoid dust formation. Ensure adequate ventilation. Do not use compressed air for cleaning.
For emergency responders: Wear breathing apparatus if exposed to vapours/dust/spray/gases.

Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

Methods and materials for containment and cleaning up

Covering of drains. Take up mechanically.
Sweep up and shovel. Take care not to raise dust. Place in appropriate containers for disposal. Ventilate affected area.

Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

7. Handling and Storage

Precautions for safe handling

Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid ingestion and inhalation. Avoid formation of dust. Do not get in eyes, on skin, or on clothing. Normal measures for preventive fire protection. Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Storage class 13.
Incompatible materials: Oxidizing agents, acids.

Specific end use(s)

Apart from the uses mentioned in section 1 no other specific uses are stipulated.

8. Exposure Controls/Personal Protection

Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles) (European standard - EN166) and face protection.

Skin protection

Hand Protection: Protective gloves (The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN374 derived from it.). Other protection measures: Wear appropriate protective gloves and clothing to prevent skin exposure. Wash hands thoroughly after handling.

Body Protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory protection

No protective equipment is needed under normal use conditions. Use a NIOSH/MSHA or European Standard EN136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. Recommended Filter type: Particulates filter. Small scale/Laboratory use: Maintain adequate ventilation. Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice.

Control of environmental exposure

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

9. Physical and Chemical Characteristics

Information on basic physical and chemical properties

Appearance

Form: Powder

Colour: Black

Odor: No data available

pH: No data available

Melting point/range: No data available

Boiling point/range: No data available

Flash point: No data available

Evaporation rate: Not applicable - Solid

Flammability (solid, gas): No data available

Upper/lower flammability or explosive limits: No data available

Vapor pressure: No data available

Relative density: 4.56 g/cm^3

Water solubility: No data available

Partition coefficient: No data available

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Viscosity: Not applicable

Other information

Molecular formula: Cu_2ZnSnS_4

Molecular weight: 439.47 g/mol

10. Stability and reactivity

Reactivity

None known, based on information available.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

No data available.

Conditions to avoid

No data available.

Incompatible materials

Oxidizing agents, acids.

Hazardous decomposition products

Metal oxide fume, hydrogen sulfide, sulfur dioxide. In the event of fire: see section 5.

11. Toxicological Information

Information on toxicological effects

Acute toxicity

No data available.

Skin corrosion/irritation

No data available.

Serious eye damage/eye irritation

No data available.

Respiratory or skin sensitisation

No data available.

Germ cell mutagenicity

No data available.

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA: Not listed.

Reproductive toxicity

No data available.

Specific target organ toxicity -single exposure

No data available.

Specific target organ toxicity -repeated exposure

No data available.

Aspiration hazard

Not applicable. Solid.

Additional Information

Endocrine Disrupting Properties: Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

12. Ecological Information

Toxicity

No data available.

Persistence and degradability

No data available.

Bioaccumulative potential

No data available.

Mobility in soil

No data available.

Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Other adverse effects

Persistent Organic Pollutant: This product does not contain any known or suspected substance.
Ozone Depletion Potential: This product does not contain any known or suspected substance.
Endocrine Disruptor: This product does not contain any known or suspected endocrine disruptors.

13. Disposal Considerations

Waste treatment methods

Dispose of contents and containers in accordance with applicable local, regional, national, and international regulations. Where feasible, consider recovery or recycling through an authorized waste management facility. The appropriate disposal method should be determined based on the waste classification and applicable regulatory requirements.

14. Transportation Information

ADR

Not classified as hazardous for transport.

IMDG

Not classified as hazardous for transport.

IATA

Not classified as hazardous for transport.

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture:

This Safety Data Sheet is prepared in accordance with Commission Regulation (EC) 1907/2006, amended by Commission Regulation (EU) 2020/878.
Authorisations/Restrictions: Regulation (EC) 1907/2006, REACH, Annex XIV list of substances subject to authorisation: Not applicable.
Regulation (EC) 1907/2006, REACH, Annex XVII restrictions on the manufacture, placing on the market and use of certain dangerous substances: Not applicable.
Regulation (EC) 1005/2009 on substances that deplete the ozone layer: Not applicable.
Regulation (EU) 2019/1021 on persistent organic pollutants (recast): Not applicable.

Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

16. Other information

Revision Date:
2026-09-22
Version:
1.0

Disclaimer
The information of this safety datasheet is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.