

SDS SHEET

Rev 12-13-17

Copper Indium Sulfide / Zinc Sulfide Nanocrystals in Water

1. PRODUCT IDENTIFICATION

Chemical Name: Copper Indium Sulfide / Zinc Sulfide Nanocrystals

Supplier: NNCrystal US Corporation 534 W Research Center Blvd., Ste 254 Fayetteville, AR 72701

Product Line: CISW

Phone: 479.595.0662

Recommended Use: Research and development use only

2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Inhalation (Category 4), H332

Acute toxicity, Dermal (Category 4), H312

Skin irritation (Category 2), H315

Eye irritation (Category 2A), H319

Specific target organ toxicity -single exposure (Category 3), Respiratory system, H335

GHS Label Elements:



Signal Word: Warning

Hazardous Statements

H302 + H312 + H332	Harmful if swallowed, in contact with skin or if inhaled
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

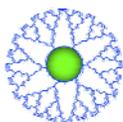
Precautionary Statements

P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well - ventilated area.
P280	Wear eye protection/ face protection.

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P280	Wear protective gloves/ protective clothing.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell.
P304 + P340 + P312	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P403 + P233	Store in a well - ventilated place. Keep container tightly closed.
P501	Dispose of contents/ container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS -- none

3. COMPOSITION/INFORMATION ON INGREDIENT (EACH VIAL)

Chemical Name: Copper Indium sulfide/Zinc sulfide

Chemical Formula: CuInS/ZnS

<u>Substance Name</u>	<u>CAS #</u>
CuS	19138-68-2
In ₂ S ₃	12030-24-9
ZnS	1314-98-3
3-mercaptopropionic acid	107-96-0
Water	7732-18-5

4. FIRST AID MEASURES

Eye:

1. Flush immediately with warm water for at least 20 minutes
2. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids
3. If pain persists or recurs seek medical attention
4. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel

Skin:

1. Removing contaminated clothing, shoes and leathery wearings
2. Washing affected area thoroughly with soap and water for at least 20 minutes
3. Call a physician if irritation develops or persists

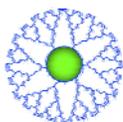
Ingestion:

1. If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomits
2. If victim is conscious and alert, give 2-4 cupfuls of milk/water to dilute the substance in the stomach
3. Never give anything by mouth to an unconscious person
4. Don't induce vomiting unless directed to by a medical person
5. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible, prior to initiating first aid procedures
6. Seek medical attention

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Inhalation

1. Remove from further exposure and flush thoroughly with air
2. Lay patient down. Keep warm and rested
3. Prosthesis such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures
4. If respiratory irritation seek immediate medical assistance and call a physician

5. FIRE FIGHTING MEASURES

Suitable extinguishing agents: Foam, CO₂, dry chemical

Product is not flammable.

Protective equipment: Wear self-contained respirator if necessary. Wear protective gloves.

6. ACCIDENTAL RELEASE MEASURES

Person-related safety precautions: Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation

Measures for environmental protection: Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

1. Remove all ignition sources
2. Clean up all spills immediately
3. Avoid breathing vapors and contact with skin and eyes
4. Control personal contact by using protective equipment
5. Contain and absorb small quantities with vermiculite or other absorbent material
6. Wipe up
7. Collect residues in a flammable waste container

7. HANDLING AND STORAGE

Precautions for safe handling:

1. Keep container tightly sealed. Store in refrigerator (2-8°C) under dark conditions.
2. Wash thoroughly after handling

Conditions for safe storage, including any incompatibilities

1. Keep container tightly sealed. Store in refrigerator (2-8°C) under dark conditions.
2. Do not store with acids or oxidizers

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits Indium Sulfide Component:

Indium (III) sulfide 12030-24-9

TWA 0.100000 mg/m³

USA. ACGIH Threshold Limit Values (TLV)

9. PHYSICAL AND CHEMICAL PROPERTIES

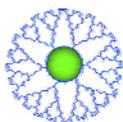
Form: Liquid form - Crystalline powder, dissolved in a solvent

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Color: Green to dark red

Odor: Odor dependent upon solvent used. Crystalline powder is odorless

Melting point/Melting range: The solvent is liquid and depends on the chemical composition of the solvent.

Boiling point/Boiling range: Determined by solvent used

Sublimation temperature / start: Not determined

Flash point: Dependent upon solvent used

Ignition temperature: Dependent upon solvent used

Decomposition temperature: Not determined

Danger of explosion: Dependent upon solvent used. Crystalline powder does not present an explosion hazard.

Explosion limits: Currently unknown for nanocrystals

Vapor pressure: Dependent upon solvent used

Solubility in / Miscibility with Polar Solvents: Soluble when hydrophilic ligands are present

Solubility in / Miscibility with Non-Polar Solvents: Soluble when hydrophobic ligands are present

10. STABILITY AND REACTIVITY

Reactivity: Stable under normal conditions and pressures

Stability: Stable at room temperature in closed containers under normal storage and handling conditions

Incompatible materials: Heat, flame, strong oxidizers, nitric and sulfuric acids, chlorine, nitrogen tetroxide; will attack some forms of plastics, rubber, and coatings

Hazardous decomposition products: Carbon monoxide, carbon dioxide, hydrocarbons

Thermal decomposition / conditions to be avoided: Not determined, but temperature increases will affect the solvent used.

Be aware of the necessary warnings for the specific solvent used.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: No data available

Skin corrosion/irritation: No data available

Serious eye damage/eye irritation: No data available

Respiratory or skin sensitization: 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.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: No data available

Specific target organ toxicity - single exposure Inhalation: May cause respiratory irritation.

Specific target organ toxicity - repeated exposure: No data available

Aspiration hazard: No data available

Additional Information

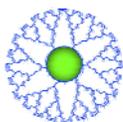
RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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12. ECOLOGICAL INFORMATION

Do not allow material to be released to the environment without proper governmental permits.

13. DISPOSAL CONSIDERATIONS

Consult local or national regulations for proper disposal.

14. TRANSPORT INFORMATION

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable

15. REGULATIONS

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

Zinc Sulfide	CAS-No. 1314-98-3	Revision Date 2007-01-07
Indium(III) sulfide red	CAS -No. 12030-24-9	Revision Date 2007-07-01

Pennsylvania Right To Know Components

Zinc Sulfide	CAS-No. 1314-98-3	Revision Date 2007-01-07
Indium(III) sulfide red	CAS -No. 12030-24-9	Revision Date 2007-07-01

New Jersey Right to Know Components

Zinc Sulfide	CAS-No. 1314-98-3	Revision Date 2007-01-07
Indium(III) sulfide red	CAS -No. 12030-24-9	Revision Date 2007-07-01

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

HMIS Rating

Health hazard: 2

Chronic Health Hazard: *

Flammability: 0

Physical Hazard: 0

NFPA Rating

Health hazard: 2

Fire Hazard: 0

Reactivity Hazard: 0

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