

1. Chemical and Company Identification

Product Name: Cadmium Selenide Zinc Sulfide Quantum Dots - Carboxyl

Product Use: Laboratory chemical – R&D use only

Manufacturer/Supplier: Cytodiagnosics Inc., 919 Fraser Drive, Unit 11, Burlington, Ontario,
Canada, L7L 4X8

Phone: (866) 344-3954

Web: <https://www.cytodiagnosics.com>Information and Support: customer_service@cytodiagnosics.com**2. Hazards Identification****Classification of the substance or mixture:**

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

Acute toxicity, Oral (Category 4), H302

Skin irritation (Category 2), H315

Eye irritation (Category 2A), H319

Acute toxicity, Inhalation (Category 4), H332

Carcinogenicity (Category 1A), H350

Chronic aquatic toxicity (Category 2), H411

GHS Label Elements and Precautionary Statements:**Signal Word:** Danger**Hazardous Statements**

H302 + H332	Harmful if swallowed or if inhaled
H315	Causes skin irritation.
H350	May cause cancer.
H373	May cause damage to organs (Gastro-intestinal system, Liver, Immune) through prolonged or repeated exposure.
H373	May cause damage to organs (Kidney, Bone) through prolonged or repeated exposure if swallowed.
H410	Very toxic to aquatic life with long lasting effects

Precautionary Statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.

P270	Do not eat, drink or smoke when using this product
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P331	Do NOT induce vomiting.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

Hazards not otherwise classified:

None

3. Composition/Information on Ingredients**This product contains:** Cadmium Selenide/Zinc Sulfide Quantum Dots**Chemical Formula:** CdSe/ZnS**Components:****Component 1:** CdSe, CAS# 1306-24-7**Component 2:** ZnS, CAS# 1314-98-3**Component 3:** Water, CAS# 7732-18-5**Component 4:** Carboxylic acid ligand**4. First Aid Measures****In case of skin contact:** In case of contact with skin, immediately remove contaminated clothing and wash extensively with soap and water and seek medical advice if symptoms occur.**In case of ingestion:** If swallowed and person is conscious wash mouth with water, seek medical advice immediately.**In case of eye contact:** In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.**If case of inhalation:** In case of accident by inhalation, remove to fresh air. If breathing becomes difficult seek medical advice. If not breathing, give artificial respiration.**Most important symptoms and effects, both acute and delayed**

The most important known symptoms and effects are described in the labeling (see section 2) and/or in section 11.

Immediate medical attention and special treatment needed:

No data available

5. Fire Fighting Measures

Suitable extinguishing media:

Use alcohol-resistant foam, dry chemical or carbon dioxide.

Product is not flammable**Special protective equipment and precautions for fire-fighters:**

Wear self-contained breathing apparatus if necessary. Wear protective gloves.

6. Accidental Release Measures**Personal precautions, protective equipment and emergency procedures:**

Use personal protective equipment. Avoid aerosols or dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.

Methods and materials for containment and cleaning up:

1. Clean up all spills immediately
2. Avoid breathing vapors and contact with skin and eyes
3. Control personal contact by using protective equipment
4. Contain and absorb small quantities with vermiculite or other absorbent material
5. Wipe up

Do not allow product to enter drains or the environment. For disposal see section 13.

7. Handling and Storage**Precautions for safe handling:**

1. Keep container tightly closed in a dry and well-ventilated place. Containers, which are opened, must be carefully resealed and kept upright to prevent leakage.
2. Avoid formation of aerosols.
3. Provide adequate exhaust ventilation at places aerosols may form.
4. Wash thoroughly after handling.

Conditions for safe storage:

1. Keep container tightly closed in a dry and well-ventilated place. Containers, which are opened, must be carefully resealed and kept upright to prevent leakage.
2. Recommended storage temperature 2-8°C under dark conditions.
3. Do not store with acids or oxidizers.

8. Exposure Controls/Personal Protection**Exposure Limits Cadmium Sulfide:**

TWA: 0.01 (ppm) Consult local authorities for acceptable exposure limits.

Additional information about design of technical systems: Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

General protective and hygienic measures: The usual precautionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages, and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands: Impervious gloves – check gloves using UV light after use to determine level of contamination.

Eye protection: Safety glasses

Body protection: Protective work clothing.

9. Physical and Chemical Properties

Form: Liquid form – Crystalline powder, dissolved in water

Color: Clear/Yellow – Red/Brown

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

Melting point/Melting range: ~400°C to bulk melting point of CdSe crystals. The solvent is liquid and melting point depends on the chemical composition of the solvent.

Boiling point/Boiling range: Determined by solvent used

Sublimation temperature / start: approx. 1150 °C

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

Density: 5.81 g/cm³ (crystal at 20 °C) for the nanocrystal powder if isolated

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:** Acids, bases, oxidants, reductants, and ligand to the nanocrystals should be used with caution.

Hazardous decomposition products: Carbon monoxide, carbon dioxide, hydrocarbons

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

In the event of fire: see section 5

11. Toxicological Information

Skin: Irritant to skin and mucous membranes.

Eye: Irritating effect.

Sensitization: No sensitizing effects known.

Additional toxicological information: Danger through skin absorption. To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

Target Organs: Lungs, Liver, Kidneys

EPA-B1: Probable human carcinogen, limited evidence of carcinogenicity from epidemiologic studies. **IARC-1:** Carcinogenic to humans: sufficient evidence of carcinogenicity.

NTP-2: Reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals. Carcinogen as defined by OSHA.

ACGIH A2: Suspected human carcinogen: Agent is carcinogenic in experimental animals at dose levels, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. Available epidemiologic studies are conflicting or insufficient to confirm an increased risk of cancer in exposed humans.

WARNING: Many of the toxic effects of CdSe/ZnS nanocrystals are still being researched and are currently unknown at this point. Use at own risk.

12. Ecological Information

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

13. Disposal Considerations

Disposal: Consult a licensed waste disposal specialist for proper destruction. Observe all local, state and federal regulations.

14. Transport Information

U.S. DOT 49 CFR 172.101

ID Number: UN2570

Hazard class: 6

Packing Group: III

Labeling Requirements: Poison

Canadian Transportation of Dangerous Goods: UN2570, Class 6.1

Land Transport ADR/RID: UN2570, Class 6.1, Class Code F1, Pack group III

Air Transport IATA/ICAO: UN2570, Class or Division 6.1, Pack group III

Exceptions: 49 CFR 173.4

15. Regulatory Information

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations and the safety data sheet contains all of the information required by those regulations.

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA\ Title III, Section 302. **SARA 313 Components**

The following components are subject to reporting levels established by SARA Title III, Section 313:

Zinc Sulfide	CAS-No. 1314-98-3	Revision Date 2007-01-07
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Massachusetts Right to Know Components

No components are subject to the Massachusetts Right to Know act

Pennsylvania Right to Know Components

Cadmium Selenide	CAS-No.1306-24-7	Revision Date 2007-01-07
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Zinc Sulfide	CAS-No. 1314-98-3	Revision Date 2007-01-07
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New Jersey Right to Know Components

Cadmium Selenide	CAS-No.1306-24-7	Revision Date 2007-01-07
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Zinc Sulfide	CAS-No. 1314-98-3	Revision Date 2007-01-07
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California Prop. 65 Components

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

16. Other Information**HMIS Rating**

Health Hazard: 1

Flammability: 0

Physical Hazard: 0

NFPA Rating

Health Hazard: 1

Fire Hazard: 0

Reactivity Hazard: 0

This product is for laboratory research purposes, not for diagnostic or therapeutic use in humans or animals.

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. Users should make independent decisions regarding completeness of the information based on all sources available. Cytodiagnostics Inc. shall not be held liable for any damage resulting from handling or contact with the above product.

Revision Date: 1.1.2024