

## Material Safety Data Sheet: Cadmium Selenide/Cadmium Sulfide/Zinc Sulfide Core/Shell/Shell Quantum Dots in Toluene

### Section 1: Chemical Product and Company Identification

Product Name: Cadmium Selenide/Cadmium Sulfide/Zinc Sulfide Core/shell/shell quantum dots in toluene  
Created Date: July 19, 2015  
Manufacturer/Supplier by: Mesolight Inc  
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### Section 2: Composition, Information or Ingredients

INGREDIENT	CAS#
Cadmium selenide	1306-24-7
Cadmium sulfide	1306-23-6
Zinc sulfide	1314-98-3
Octadecylamine	124-30-1
Toluene	108-88-3

### Section 3: Hazard Identification

#### Emergency Overview

##### OSHA Hazards

Flammable liquid, Target Organ Effect, Irritant, Teratogen, Reproductive hazard

##### Target Organs

Bladder, Liver, Kidney, Brain.

##### GHS Classification

Flammable liquids (Category 2)  
Acute toxicity, Inhalation (Category 4)  
Skin irritation (Category 2)  
Eye irritation (Category 2A)  
Reproductive toxicity (Category 2)  
Specific target organ toxicity - single exposure (Category 2)  
Specific target organ toxicity - single exposure (Category 3)  
Aspiration hazard (Category 1)  
Acute aquatic toxicity (Category 2)

##### GHS Label elements, including precautionary statements

##### Hazard statement(s)

H225 Highly flammable liquid and vapour.  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.

H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H361	Suspected of damaging fertility or the unborn child.
H371	May cause damage to organs.
H401	Toxic to aquatic life.

#### Precautionary statement(s)

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P281	Use personal protective equipment as required.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P331	Do NOT induce vomiting.

#### HMIS Classification

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	3
Physical hazards:	0

#### NFPA Rating

Health hazard:	2
Fire:	3
Reactivity Hazard:	0

#### Potential Health Effects

<b>Inhalation</b>	May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.
<b>Skin</b>	May be harmful if absorbed through skin. Causes skin irritation.
<b>Eyes</b>	Causes eye irritation.
<b>Ingestion</b>	May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage

#### Section 4: First Aid Measures

<b>Skin Contact:</b>	Wash the skin thoroughly with soap and water and seek medical advice.
<b>Eye contact:</b>	If eye contact occurs, rinse eye thoroughly and seek medical advice
<b>Inhalation:</b>	If inhaled, supply fresh air or respirator and seek medical advice.
<b>Ingestion:</b>	If swallowed, seek medical attention immediately

#### Section 5: Fire-Fighting Measures

<b>Flammable Limits:</b>	Hazard on contact with acid
<b>Extinguishing Media:</b>	Do not use water, use dry chemical, dry ice, CO <sub>2</sub>

**Special Fire Fighting Procedures:** Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes

**Unusual Fire and Explosion Hazards:** Can react with moisture or acids to liberate, H<sub>2</sub>S, H<sub>2</sub>Se which are fire and explosion hazard. When heated to decomposition, it may emit toxic fumes of SO<sub>2</sub>.

## Section 6: Accidental Release Measures

**Personal Precautions:** Always use proper protective equipment.  
**Environmental Precautions:** Do not allow material to reach drains or ground water.  
**Cleanup of small spills:** Vacuum up spill using a high efficiency unit and place in a container for proper disposal.  
**Disposal:** Collect and dispose of all waste in an appropriate container.

## Section 7: Handling and Storage

**Handling:** Follow safe laboratory practices. The product should only be used by or closely supervised by an individual trained to handle potentially hazardous materials.  
**Storage:** Store in a dark, cool (4-25 °C) place in a tightly sealed container. Store in same type of container (glass/plastic) as shipped. Do not freeze.

## Section 8: Exposure Controls and Personal Protection

**Engineering Controls:** Use fume hood with proper ventilation.  
**Personal Protection:** Gloves, lab coat, and goggles.

## Section 9: Physical and Chemical Properties

Form: liquid  
Color: green to red  
PH: Not disclosed  
Specific Gravity: Not disclosed  
Boiling point: 110 - 111 °C (230 - 232 °F)  
Melting point: n.a.  
Freezing point: n.a  
Vapor Pressure: 0 mmHg  
Odor: Not disclosed  
Solubility: soluble in organic solvents, chloroform, toluene, tetrahydrofuran

## Section 10: Stability and Reactivity

**Stability:** The product is stable  
**Incompatibility (Conditions to Avoid):** Strong acids, oxidants.  
**Thermal decomposition:** Not determined  
**Materials to avoid:** Not determined  
**Hazardous Polymerization:** Will not occur  
**Conditions to Avoid:** Heat, flame and incompatible materials  
**Hazardous Decomposition Products:** ZnO, CdO, S, H<sub>2</sub>S, H<sub>2</sub>Se, SeO<sub>2</sub>, SO<sub>2</sub>

## Section 11: Toxicological Information

<b>RTECS Number:</b>	Not disclosed
<b>Toxicity:</b>	Not disclosed
<b>Health Hazards:</b>	Refer to section 4
<b>Carcinogenicity:</b>	No information is available

## Section 12: Ecological Information

No data available. See section 6

## Section 13: Disposal considerations

Dispose of in accordance with local, state, or national regulations.

## Section 14: Transport information

<b>U.S. DOT Classification:</b>	Not a hazardous material for land or air transport.
<b>Identification Number:</b>	Not applicable
<b>Packing Group:</b>	Not applicable
<b>Proper Shipping Name:</b>	Not applicable

## Section 15: Regulations

No data available for TSCA, EEC EINECS number, EEC risk statements, or other regulations.

## Section 16: Other information

Disclaimer: For R&D only. Not intended for food, drug, household, agricultural or cosmetic use. The above information is believed to be correct. Mesolight Inc shall not be held any liable for any damage resulting from handling or contact with the above product.