

# MSDS

## PbS Core EviDots in Toluene

### Section 1 - Chemical Product

Product Family #:	PbS Core EviDots
Substance:	Core EviDots packed in Toluene
Trade Names/Synonyms:	Core EviDots
Chemical Family:	Matrix: aromatic hydrocarbon Nanocrystal: IV-VI semiconductor compound

### Section 2 - Composition, Information on Ingredients

Component	CAS#	EC#	% By Weight
Toluene	108-88-3	203-625-9	~ 99
Lead Sulfide (as nanocrystal compound)	1314-87-0	215-246-6	< 1

### Section 3 - Hazards Identification

Hazard Description:	Toxic, Dangerous to the Environment
NFPA Rating:	Health = 2 Fire = 3 Reactivity = 0

#### Emergency Overview

Color:	Brown-Black
Physical Form:	Liquid
Odor:	Distinct odor
Major Health Hazards:	Respiratory tract irritation, skin irritation, eye irritation, aspiration hazard, central nervous system depression, nerve damage.
Physical Hazards:	Flammable

#### Potential Health Effects

Inhalation:	Irritation, nausea, headache, drowsiness, dizziness, disorientation, sleep disturbances, loss of coordination, dilated pupils, kidney damage and liver damage
Skin Contact:	Irritation

Potential Health Effects	
Eye Contact:	Irritation
Ingestion:	Nausea, stomach pain, headache, drowsiness, dizziness, disorientation, sleep disturbances, loss of coordination, dilated pupils, kidney damage, liver damage, aspiration hazard.
Carcinogen Status:	Toluene
OSHA:	No
NTP:	No
IARC:	No

## Section 4 - First Aid Measures

Inhalation:	If inhaled, remove to fresh air. If not breathing give artificial respiration and seek medical attention.
Skin Contact:	Wash skin with soap and water for at least 15 minutes while removing contaminated personal protective equipment, clothing and shoes. Seek medical attention if needed.
Eye Contact:	Irrigate eyes for at least 15 minutes. Seek medical attention.
Ingestion:	If ingested, do not induce vomiting, seek medical attention immediately.

## Section 5 - Fire Fighting Measures

Extinguishing Media:	Dry chemical, carbon dioxide and foam extinguisher
Fire Fighting:	Avoid Inhalation of material or combustion by-products
Flash Point:	39F (4C) (closed cup)
Flammable Limits:	1.2% LEL -7.1% UEL
Autoignition Point:	896 F (480 C)
Flammability Class:	OSHA Class IB

## Section 6 - Accidental Release Measures

Small Spills:	Absorb with spill pillow or other non-combustible material. Collect spilled material in appropriate container for disposal
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## Section 7 - Handling and Storage

Store in a tightly closed container. Store in a cool dry place.

## Section 8 - Engineering Controls & Personal Protective Equipment

Exposure Limits	
Toluene	200ppm OSHA TWA PEL 300ppm ceiling OSHA 50ppm ACGIH TWA (skin) 100ppm (375 mg/m <sup>3</sup> ) NIOSH TWA 10hour 190mg/m <sup>3</sup> DFG MAK 50ppm (191 mg/m <sup>3</sup> ) UK OES TWA

Ventilation:	Provide local exhaust ventilation system or work in a chemical fume hood. Considerations should be made for the use of non-sparking or intrinsically safe ventilation systems and equipment if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.
Eye Protection:	Wear safety glasses with side shields as a minimum level of protection. If splash or splatter is possible, wear chemical/splash resistant safety goggles and or face shield. Emergency eye wash station and quick drench shower should be provided in the immediate work area as per the ANSI Z358.1 guidelines.
Clothing:	Wear appropriate chemical resistant clothing.
Gloves:	Wear appropriate chemical resistant gloves for type of exposure. (polyvinyl alcohol, Teflon™ and Viton™ are resistant to toluene exposure)
Respirator:	Refer to 29CFR1910.134 for selection of appropriate respiratory protection. Organic vapor cartridge with a ½ or full face mask, where toluene vapors do not exceed the assigned protection factor for the respirator. For unknown concentrations or IDLH atmospheres wear self-contained breathing apparatus or supplied air with escape bottle.

## Section 9 - Physical & Chemical Properties

Lead Sulfide Core EviDots in Toluene	
Physical State:	liquid
Color:	Brown-Black
Odor:	distinct aromatic odor
Odor Threshold:	~10-15 ppm
Molecular Weight:	92.14
Boiling Point:	232F (111 C)
Freezing Point:	-139 F (-95 C)
Vapor Pressure:	22mmHg @20C
Vapor Density ( air = 1):	3.14
Specific Gravity ( water = 1):	0.8669
pH:	No data available

## Section 10 - Reactivity

Stability:	Stable at standard temperatures and pressure.
Conditions to avoid:	Avoid heat, sparks and other sources of ignition.
Incompatible:	Incompatible with oxidizing materials, halogens, acids, combustible materials and metal salts
Hazards Decomposition:	Combustion produces toxic by-products.
Polymerization:	Will not polymerize.

## Section 11 - Toxicological Information

Toluene	
Irritation Data:	300 ppm eyes-human; 435 mg skin-rabbit mild; 500 mg skin-rabbit moderate; 20mg/24hours skin-rabbit moderate
Toxicity Data:	719ul/kg oral-man LDLo; 50 mg/kg oral-human LDLo; 200 ppm inhalation-human TCLo; 100 ppm inhalation-man TCLo; 636 mg/kg oral-rat LD50; 49 gm/m3/4 hours inhalation-rat LC50; 1332 mg/kg intraperitoneal-rat LD50; 1960 mg/kg intravenous-rat LD50; 6900 mg/kg unreported-rat LD50; 400 ppm/24hours inhalation-mouse LC50; 59 mg/kg intraperitoneal-mouse LD50; 2250 mg/kg subcutaneous-mouse LD50; 2gm/kg unreported-mouse LD50; 14100ul/kg skin-rabbit LD50; 130mg/kg intravenous-rabbit LDLo; 1600 ppm inhalation-guinea pig LCLo
Local Effects:	Irritant; inhalation, skin, eye
Slightly Toxic:	Inhalation & dermal absorption
Moderately Toxic:	Ingestion
Target Organs:	Nervous system
Additional Toxicological Information:	To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. Zinc Selenide, in the form of a nanocrystal may or may not present the same health hazards as a larger zinc or selenium containing molecules. It is therefore encouraged to use caution when handling this product as its toxicity and modes of exposure are not well characterized or understood.

## Section 12 - Ecological Information

Do not allow material to be released to the environment (ground, air or water bodies) without proper permits. Relatively non-persistent in the environment. Accumulates very little in the bodies of living organisms.

## Section 13 - Transportation Information

U.S. DOT:	Class 3, packing group II, UN1294
Canadian Transportation of Dangerous Goods:	UN 1294 Class 3
Land Transport ADR/RID:	UN1294, Class 3, Class Code F1, Pack group II
Air Transport IATA/ICAO:	UN1294, Class or Division 3, pack group II
Exceptions:	49 CFR 173.4

## Section 14 - Disposal

U.S. EPA 40 CFR 262: Hazardous Waste Number: D001 (Flammable), U220 (toluene)  
Dispose in accordance with all applicable local, state and federal regulations.

## Section 15 - Regulatory Information

### US Regulations

#### **Toluene**

CERCLA: 1000 Lbs RQ

SARA Title III, sec. 302, 304: Not regulated

SARA Title III, Section 311/312

Acute: Yes

Chronic: Yes

Fire: No  
Reactive: No  
Sudden Release: No  
US Inventory (TSCA) listed: Yes

### **Canadian Regulations**

WHMIS Classification: Not available

### **European Regulations**

EC Classification:  
F Highly Flammable  
Xn-Harmful

### **EC Risk Phrases**

R11, R20, S2, S16, S25, S29, S33

## **Section 16 - Other Information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Evident Technologies shall not be held liable for any damage resulting from handling or from contact with the above product. See packing slip for additional terms and conditions of sale.

Revision Date: 3/25/2005  
Creation Date: 12/7/2004